

VOL. 43, No. 6

AUGUST 1975

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### COVER PHOTO

The "Red Baron" and Lake Eyre are almost synonymous to many Australian amateurs. The story of this land-locked mobile-marine expedition appears on page 5.



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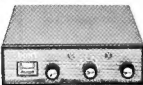
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# amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910



AUGUST 1975

VOL. 43, No. 8

Price: 70 cents

## QSP

### ON LAUNCHING WIA NEWS

It has now become possible to organise a regular column in AR — WIA NEWS (pronounced wire news) giving publicity to Federal Institute affairs both at the national and international level.

You must be the judge as to the value of the column, but remember that you can communicate amongst yourselves much more quickly than it takes WIA NEWS to see the light of day in AR because it is at least one month old when it reaches you.

Reluctance to publicise Federal news through the medium of AR is sometimes labelled as a failure, inability to find someone to write such a column has been the real cause of all the troubles.

Whichever way your views prompt you, please remember that AR circulates all over the world. The desire not to publicise our troubles for the delectation of overseas readers has been in the back of our minds, but perhaps we have been too reticent about ourselves, and too self-conscious to admit our weakness.

The WIA is by no means a perfect organisation. We have our own serious infirmity problems. We try to accommodate views which are poles apart while doing our best to avoid fence-sitting. Genuine efforts are always made in the best short and long term interests of amateur radio in Australia.

Priorities constantly vary to meet whatever aspects are currently under discussion.

The Executive must tender an account of its actions to the Federal Council.

This Federal Council consists of your Divisional Federal Councillor, plus one from each of the other six Divisions.

All Divisions must have their say. Some may feel more strongly than others on certain issues. Nevertheless, if we are to operate effectively, all views are required.

WIA NEWS is presented by the executive so that you can be informed of Institute affairs and form effective opinions. Your Divisional Federal Councillor wants to know your views.

D. A. WARDLAW VK3ADW  
Federal President

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### DARWIN APPEAL

The Executive announce that the appeal for donations for those losing gear during Cyclone Tracy in the Darwin area

WILL CLOSE ON 1st SEPTEMBER 1975  
• PLEASE SEND IN YOUR DONATION NOW

The following is List No. 3 of contributors:—  
Amount already acknowledged \$207.70  
per VK4 Division \$24.28  
VK6 Division \$37.52  
VK3YTO \$4.00  
per VK5 Division \$50.00

(VK5SE	\$3.00
VK5ZB	\$5.00
VK5NK	\$5.00
VK5PA, (SPML)	\$8.00
VK5QK	\$10.00
VK5 Division	\$19.00
per VK1 Division	\$40.90
(L20781	\$2.00
L20857	\$2.00
VK1QJ	\$2.00
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VK1TR	\$2.00
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VK1RH	\$2.00
VK1VP	\$3.00
VK1ADP	\$2.00
VK1MS	\$2.00
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VK1DA	\$2.00
per VK1EP	\$12.90
Geelong Hamfest Society	\$600.00
TOTAL TO DATE	\$964.38

The VK3 DIVISION would like all persons and QSL Bureaus to note that the G.P.O. Box 1734, will be cancelled later this year.

Mail should be directed as follows:

VK3 Inwards QSLs to:  
P.O. Box 154, Charleston, 2280

VK3 Outwards QSLs to:  
P.O. Box 98, French Forest, 2086

Other Divisional Mail to:  
14 Atchison St., Cross Neal, 2085

### SCOUTS STATIONS

In his bulletin 18/2 of 28th May Noel Lynch, JOTA organizer, advised that the Boy Scouts of Korea now have a scouting station on the air from 31st May with the call sign HM05. He also mentions a diploma for contacting stations on a stated number/points scored system from 1st May to 31st July, relating to Algeian Scouts celebrating the 40th anniversary of scouting in that country. For those interested write to 7X2 S.M.A. Service Diploma DQA. S.M.A. Scouts Musulmans Algiers B.P. 68, Alger-bas.

### PIRATES

A man was fined \$350 in Canberra recently for illegally transmitting broadcasts from a motor vehicle on an amateur frequency and the gear had been seized. It is understood that the case was defended.

### REFLECTION

The editorial in Short Wave Magazine for May '75 gives food for thought and can only be briefly summarised here. Austin Forsyth G6FO wrote — "In these days of rapid development in the art of

# WIANEWS

Pressures of business to be conducted by the Executive became so great that 1970 saw agreement between the Divisions to employ a Secretary and to set up an office.

A very small office was established in 1971 and it is still small. That year the Divisions saw the advantages of centralised membership records and subscriptions processing. An EDP programme was done in time for the 1972 subscription year.

Also in 1971 "Magpubs" was added to the little Federal office's duties.

In 1972 the publication of AR was handed over to the Executive. In the same year the Executive's office was moved from the Victorian Division's rooms to Toorak. It had been hoped that a joint office would have been more economical than separate offices but so many problems arose which only a move could resolve.

The Federal body does what the Divisions, acting as Federal Council, tells it to do.

The Executive office began with one person — the Secretary/Manager — with clerical and typing assistance. This person was engaged to put into effect the directives of the Executive. He was engaged on a proper salary for expertise, co-ordination and administrative abilities. That salary (with all allowances) by the way is today only 8 per cent higher than it was in 1971.

Unfortunately the work load has increased out of all proportion from the time when the concept of a Secretary/Manager was envisaged in 1970.

In 1973 the Executive recognised this and authorised the employment of a part-timer to do all the EDP and subscriptions work. This part-timer, after training, allowed the Secretary/Manager and his clerk/typist to concentrate on the more important duties of the office — negotiations with Central Office, co-ordination of numerous functions, dissemination of information to Divisions and a host of other administrative and organisational work.

In 1974 it was obvious that the time available to service AR advertising and to get more of it could be improved profitably by employing a part-timer solely for this work. This has paid off. Check the advertising in AR now compared with 1973 for example.

AR, centralised subscriptions processing, membership records, and Magpubs cannot function without a central office. AR could not be distributed without an addressing service for example.

Your AR now reaches you through a computer label addressing system which is part of EDP. In the old days a laborious, time-consuming addressing plate system was in operation.

In the old days each Division prepared, mailed, collected and accounted for their own members' subscriptions. Ask anyone who was involved what time and effort were needed from volunteers year in and year out. In Divisions with the largest membership paid staff were even required.

Improvements are required even if to meet changing conditions from year to year. The Executive has this in mind all the time. Unfortunately very little can be done in the face of severe inflationary financial stresses except to improve efficiency and productivity.

Remember what you used to get for your £2 sub? But then numbers of members were fewer and perhaps you didn't realise the work put in by unpaid volunteers behind the scenes. In those days AR made a profit at 6d a copy. You can't even buy a newspaper for 5 cents today.

Perhaps this is a slight exaggeration but have you compared your present subscriptions to other societies or clubs with what you paid them 10 or 20 years ago?

The 1975 Federal Convention approved the appointment of an investigator to put the whole WIA machine under a microscope and to come up with some answers.

Have you any ideas how the WIA can be improved?

A tremendous amount of thought has been given to publicising amateur radio in Australia, improving its image and encouraging more members.

One of the big problems is getting good publicity into the media on every possible occasion. Ever tried to convince a newspaper editor to publish a sweet little blurb about what amateur radio is about or what amateur operators did under such-and-such an emergency?

Apart from this one time effort, even if you succeed, how many will read it and how long will it stay in the public's memory? Vice, murder, sport, political bickerings. These seem to be the money spinners.

The yawn of a hippo is puny compared with the yawn of an editor when confronted with amateur radio. But his yawn is just as great on a whole range of other beneficial subjects unless he can "smell" a juicy story.

Anything which can be done to get favourable publicity for our leisure activity is good. Not merely a one time hit. It must go on and on, all the time.

What would you do if you read in your newspaper that amateurs ("hams" of course) were really OGT agents working undercover for the secret service of a foreign power or were Martians in humanoid form?

Would all of you put pen to paper and bombard the editor with letters of correction? And yet this kind of rubbish hits the media from time to time.

Somehow a beneficial and tiny minority group of a few thousand must keep its good works before the eyes of the public millions.

The ACT Division has been given the job of examining ways and means to produce an economically feasible publicity package and film for Divisions for use at shows, exhibitions and for displays to adult and high school groups.

How about offering them your help? Write now to P.O. Box 111 Canberra City, ACT, 2601.

An often asked question: Does the WIA represent the Australian amateur to the authorities? Yes! Six consultations on various matters occurred during the month of June alone between the Executive office and the Central office of the Radio Branch.

electronics — for it is now an art as well as a science — the field is so vast that no one individual can have much knowledge, and certainly very little experience, outside his own range of activity. The cleverest man is those who realise how little they know and how much there is to learn. As radio amateurs, many of us are not bound by the limitations of the professional radio engineer, who has to keep his mind on the particular aspect of the subject that earns him his living. As residence radio men, we can range over the whole field at will and he lists a vast range of subjects. He thinks the amateur generally may be a more competent practical man than his professional confrere and it is this fact that enables the amateur to be a useful and important member of the whole fraternity of radio men.

**CITIZENSHIP**  
April QST carries an item that the (USA) amateur rules have been amended to delete references to citizenship or nationality with respect to eligibility for amateur license. The new rules require each licensee to furnish an address in the U.S.A. The

only aliens not eligible to obtain an amateur license, so it appears, foreign governments.

## IN BAND TRANSMISSIONS

April '75 QST quotes a clarification by FCC of the rules for amateur transmissions making it plain that both wanted and unwanted products must be confined to the amateur bands within the limits of good practice. An example is quoted of a type A3J emission which limits the carrier power level to at least 40 dB below P.E.P. and in relation to unwanted sidebands and intermodulation products lays down three steps of acceptable attenuation.

## ELF

"The spectrum below 10 Mhz (at present unallocated) is far from being a forgotten territory and is the centre of much attention in the communications world at the present time". Extract from an article entitled "Radio Communications at frequencies below 10 Mhz" by G3XBM in April '76 Rad. Comes.

## SUNSPOT NUMBERS

Smoothed mean for Nov. '74 was 27.8. Mean for May 1975 provisionally 8.7. The predictions of smoothed monthly sunspot numbers drop from 9 in June by one month to 4 in Nov. '75. Swiss Fed. Obs. Zurich bulletin 8/1975.

## Afterthoughts

An omission from the published results of the VK/ZL Oceanic DX Contest 1974:  
VK SWL: L30042 3990  
L4016 2840

Sorry about some photographs reproduced back to front although the printers say this was impossible! Top right hand picture on P4 of June AR and front cover photograph of July AR were thus mislaid. ASA monetary award is \$16 not \$10 as shown on P4 of March AR.

# ON EYRE

W. M. Rice VK3ABP

54 Meidstone St., Altona 3019

During the May 1975 school vacation, VK3s NS, ABP, YBP and YFF made history by operating marine-mobile from Lake Eyre for the first time ever. This is the story of their expedition.

In 1840, the explorer Edward John Eyre was the first white man to see Australia's largest lake. For 109 years its 9300 square kilometres (named Lake Eyre by Goyder in 1859) was never known to carry more than a few centimetres of water, lying above 40 mm of solid salt. Spanning the latitudes 28 and 29 deg. S, about 700 kilometres north of Adelaide, its occasional salty pools soon dried out under a cloudless sky where solar evaporation can be up to 2 metres each year.

The lake was mapped by J. W. Lewis in 1874-5, first flown over by G. H. Halligan in 1922, and extensively explored by C. T. Madigan between 1929 and 1939. Madigan, who was Professor of Geography at Adelaide University, was of the opinion that the lake could never fill. Although fed by several large rivers, the Warburton and Cooper's Creek being the best known, they are seldom more than dry beds with occasional waterholes. The Lake Eyre Basin covers more than a million square kilometres, about one sixth of the continent, but most of this area is desert, with an average annual rainfall of less than 100 mm.

Then, in 1949, the greatest floods for more than a century filled the inland rivers, and by 1950 Lake Eyre was truly a lake, with up to three metres of water covering its area. An attempt was made to launch a sailing-boat on the lake in 1950, but it was soon swamped by large waves. Before long the seasons returned to normal, and by 1953 the lake was once again dry.

## SPEED RECORD

World history was made in May 1964, when the late Donald Campbell established the still-current speed record for a wheel-driven vehicle of 690.9 kilometres per hour over a prepared strip on the bed of Lake Eyre. This story is told in great detail by John Pearson in his book "Bluebird and the Dead Lake" (Collins, 1965). The strip was located in the south-east corner of the lake in the area known as Madigan Gulf. Headquarters for the record-breaking team was at the homestead of Muloorina Station, about half-way between the southern shore and the nearest town of Marree about 110 km to the south-east. Muloorina, established by the late Elliot Price in 1942, is a cattle station of hundreds of square kilometres of sand and saltbush, and is the nearest permanent settlement to the lake. The



homestead is adjacent to several waterholes in the normally-dry Frome River, around which grow numerous sizeable trees in a landscape otherwise marked by no trees at all.

The author first saw Lake Eyre in 1969, from one of the scheduled civil aircraft which daily link Darwin with Adelaide. In spite of the height and distance it was still impressive, although at the time completely dry. But weather is always setting new records, and in February 1973 extremely heavy rain fell over most of Queensland, breaking an eight-year drought, and bringing floods down the Diamantina and Barcoo into the Warburton and Cooper. Lake Eyre began to fill for the second time in 133 years, only 24 years after the first!

In September 1973 the author flew over the southern end of the lake in a light aircraft, seeing for the first time in his life the vast expanse of water where dazzling white salt was usual; and an idea began to germinate. No one had ever before operated on the amateur bands from a boat on Lake Eyre. Someone had to be first!

## PLANNING

Obviously, with limited funds available, one cannot organise transport, equipment and personnel overnight for such an expedition. What type of boat could be used? The water might be too shallow to launch a boat big enough for several people plus equipment. Fuel would be a problem; a sailing boat would overcome that. But sailing boats usually have keels or centreboards needing a metre or more of water. Perhaps a catamaran? With a weatherproof cabin? No such craft existed, at least not one easy to transport over rough dirt roads for long distances. Power supply? Obviously car batteries. Solid-state transceivers, naturally; they didn't have them in 1950!

While all these factors were being considered, and time rushed on, the lake might have been fast drying up again. But Nature stepped in and poured more floods into the system early in 1974. Lake Eyre, by the end of that year had a greater depth of water in it (about four metres) than had ever been known before. And up in Darwin a man named Neil Fowler had devised a sailing boat which became known as the Red Baron.

Based on Fowler's design, the Western Australian firm of Ken Hill and Dale Cameron began to produce a unique fibre-glass craft: a catamaran nearly 6 metres long and 2.4 metres wide, with a cabin in which four people could sleep. The 6 metre mast carried as a minimum about 13 square metres of sail. Yet the boat could be towed anywhere on its lightweight trailer by an ordinary car, and best of all, required only 30 cm of water, not only to float but to sail. And the alloy extrusion mast, insulated at its base by the fibreglass hull, looked a natural choice for an all-band antenna when fed through a suitable transmatch.

Hill and Cameron's Victorian agent, a dedicated yachtman named Roger Bullock, was approached in February 1975 and was immediately enthusiastic. His only Red Baron could be made available after the Sailboat 75 exhibition in April. He himself would be delighted to take part in the expedition, particularly since the plans by now envisaged making a documentary film to publicise the Lake, the amateur radio aspect, and not least, the boat. Besides, for a couple of weeks anyway, we could all get away from the approaching Melbourne winter!

## FILM

The idea of making a professional quality movie of the expedition had been thought about for 12 months, but it was only because of the technical expertise of Tim Robinson VK3YBP that it eventually became possible. Tim had been an enthusiastic movie-maker for several years, and owned a good proportion of the 16 mm equipment which would be needed. Not only that, but he knew where and from whom the rest could be borrowed or cheaply hired. The outlay for the film could therefore be held down to not much more than the cost of film-stock and processing. Even so, this was a sizable amount of money, but not beyond the team's joint resources. The audio side of the venture was looked after by Roly Roper VK3YFF, who was also no newcomer to the movie art.

A number of HF licensees had hoped to take part in the expedition, but unfortunately several could not leave their work for the necessary week or two. This by now had been decided as the period 10-25 May

1975, the first term school vacation, permitting wives and children to join the party. Ultimately there were only two HF operators, Jack Taylor VK3NS and the author VK3ABP. Even so, it was a sizable party of 17 people who left Melbourne at various times on the 9th and 10th of May and headed for Adelaide in four cars. Space was fully utilised in the vehicles and trailers, as all food and water (about 300 litres) had to be carried, plus sufficient tents and camping gear including gas stoves, lights, and a refrigerator. Battery charging was provided for with a "home-brew" portable wind-powered generator, plus an engine driven outfit if the wind proved inadequate.

#### SAFARI

Besides the Red Baron on its trailer, Roger's car also carried a lightweight 4 metre "Surf Cat" catamaran on a roof rack. Quite an eye-catching combination on the road, and few people travelling at the time between Melbourne, Adelaide and points north failed to notice it, judging by comments later heard by party members! Incidentally there was also a 3 kW outboard motor in case the Baron ran out of wind.

The team left Adelaide on Sunday morning (11 May), and arrived that night at Hawker, to enjoy the last luxury for a week or so at the Outback Motel. Monday's travelling over somewhat less-than-perfect roads (Hawker marks the end of the bitumen) was hard on trailer fittings, fuel tanks, overloaded roof-racks, and mufflers, but Mulcooria was reached just before sunset without serious mishaps. On advice from Keith Price, whose family runs the station, that the remaining 50 km to the Lake was no worse than roads already covered, the convoy pressed on into the darkness, and arrived at the shore of Level Post Bay about 8 p.m. There were some overnight visitors already there around a campfire (they brought the firewood with them!), and their gallant offer of cups of tea all round was gratefully accepted by 17 weary travellers. The tents were set up on top of the sand dunes by flashlight, (the new moon had not yet risen).

After a brief (also flashlight) inspection of the beach and the water, and some marvelling at the myriads of stars shining from the unpolluted and cloudless sky, it was time for bed.

#### BLUE WATER

Tuesday 13th May, and daylight displayed the great expanse of blue water that was Madigan Gulf, extending northward to the horizon and far beyond, yet still representing only about one-sixth of the area of the Lake. The Baron was eased on its trailer down the slope to the beach, and by mid-morning the largest sailing craft ever on the Lake was afloat. In the event, there was no depth problem; the water was 2 metres deep within 10 metres of the beach. The next few hours were spent in rigging the boat and installing the home-brew SSB transceiver. A plate had been fitted under the stern of the starboard hull and from this a wire was run up to the cabin for connection to the 9000 sq km ground-



plane! The SWR indicator and transmatch (the Rollerless Ultimate from QST of November 1973) were connected to the base of the mast, which was conveniently accessible electrically via a bolt through the cabin roof. Part of what is normally a double bunk was used as the operating table, and the battery was stowed underneath it.

After a late lunch, sailing nowhere in particular the first ever marine-mobile contact from Lake Eyre was made about 3 p.m. with Hughie VK5BC, who was land-mobile at the time, on 40 metres. It would be nice to say that QSOs followed thick and fast after that, but before long there was evidence of sad lack of amperes-hours in the rather old battery, and after a short QSO with Snow VK3MR it was necessary to go ashore and fire up the generator.

#### BROOKS ISLAND

Wednesday 14th May proved to be the highlight of the trip. By mid-morning there was a good south-westerly blowing, so plans were made to sail up to Brooks Island at the north-west corner of the Gulf about 25 nautical miles distant. A crew of 5 (Roger and Noelene Bullock being the sailors, plus VK3s YBP, YFF and ABP) set out about 11 a.m. with provisions for two meals, and more reliable batteries than before. VK3NS stayed ashore to monitor the proceedings, and with his help the first 20 metre DX was worked from the boat (VE7UZ, WB4SWS and WA6VGJ) plus a few VKs. Reports were somewhat discouraging, and it was obvious that 50 watts PEP and a distinctly non-directional antenna were going to make DX difficult. From a non-radio viewpoint the trip was exhilarating. The course was west to near Pittosporum Head, then NNW towards Artemia Point. For three hours on this leg there was no land in sight, and the waves were up to a metre high. The sun shone brilliantly, cabin temperature was about 28 degrees C, gulls and pelicans flew overhead, and it was hard to realise the boat was 500 km from the sea (and incidentally, about 12 metres below sea-level).

Brooks Island was reached just before sunset. The trip had taken longer than expected, mainly due to the heavy load aboard reducing speed to about 4 knots at the best. At some time the Baron must have crossed the track used by Donald Campbell, but he was faster! It had been hoped to set foot on the island, which is

about 7 by 3 km in size and reputed to have a fresh-water spring, but there was neither time nor provisions to anchor for the night. So, as darkness fell and the wind held fair, sail was set for home. At this stage operations were transferred to 80 metres, in the hope of working all VK during the night, but the static was bad and few QSO's were made except reports to Jack giving progress at intervals. Navigation involved little more than keeping the compass heading on south-east, with occasional checks on 148 MHz to establish range from the camp. Jack's 146 MHz signal was first heard about midnight, and the beacon light he had rigged was sighted about an hour later. Surprisingly, it was dead ahead! By this time the wind had dropped almost to nil, so the last few miles were run on the outboard motor, and the crew staggered ashore at camp about 3 a.m. After 16 hours afloat, one tends to stagger on terra firma! Incidentally, who fired a green flare at 2310 CST on 14 May from somewhere east of Madigan Gulf, or was it a particularly bright meteor?

The remainder of the stay was less eventful, mainly because lack of good winds prevented any more long trips being made. Being ashore every night, no more MM contacts were made on 80 metres. Daytime activity, seldom more than a few km from base, was mostly on 20, and for the last three days Jack's FT 101 B was used in the boat, which helped a little with DX, being at least twice the power of the 3ABP rig. On Friday 18th an attempt was made to sail down Goyder's Channel (which connects Lake Eyre North to the much smaller Lake Eyre South), but rather less than half-way even the Surf Cat grounded in soft mud with only about 20 cm of water covering it.

#### WEATHER

One gratifying feature of the visit was to hear from those worked how bad the weather was in Adelaide and Melbourne, cold, windy, raining; but the Lake Eyre sun was warm all day every day, and the nights quite mild. Enjoyment was tempered by the realisation that before long we too would have to go South and back to winter again. Visitors for the last night at the Lake were Ron VK3AFW, Ian VK3ZDW and their families returning home from Alice Springs, so they also had the opportunity of a brief sail on the Gulf before helping to separate the Baron from the water on the morning of 20th May.

It is a sobering thought to realise that in another two or three years of normal seasons all the vast body of water that is Lake Eyre will have reverted to dry salt. Already there are many thousands of dead fish around its shores as the water falls and the salinity rises. But perhaps this once in a century phenomenon may recur more frequently in the future. Perhaps the weather pattern is changing and the Lake becoming permanent. Who knows? But we

will return some day with a sailing craft again, even if needs be a land-yacht! To those who worked us either portable or in the boat, some rather special QSLs will be on their way when we have had them printed. And we hope that all our readers and many others will be able to see our documentary film on television some time in the next few months.

In the meantime we can proudly claim to have been first-ever marine-mobile Lake

Eyre (102 stations in 5 countries): to have travelled further under sail on the lake (about 75 nautical miles) than anyone before; and in the largest sailing boat ever seen there; and to have been first under sail to navigate any significant distance (25 nm) across the lake by night. Hopefully the future may allow someone else to outdo some of these claims, but the first can never be contested.

# VHF/UHF ADVISORY COMMITTEE PROPOSED BAND PLANS

During 1974, the VHF/UHF Advisory Committee proposed a draft band plan for the 70 cm amateur band. This was duly published in the October 1974 issue of AR. Prior to publication it had been forwarded to Divisions for comment. If you have not read the article, or forgot its contents, then dig it out and read it now. The explanations in general remain true for this new plan, although some of the frequencies

have been altered in accordance with APO requirements.

During 1974 and early 1975 the Executive office entered into a number of negotiations with the Central Office of the APO during which the case for beacons and repeaters in the 70 cm band was put (23 cm was also discussed but no favourable decision has as yet been achieved).

On 20th March the Central Office wrote to the Executive indicating that repeaters and beacons would be given favourable consideration provided they operated only between 430 and 440 MHz.

The VHAC then set out to redraft the plan for 70 cm. At the same time it was considered expedient to prepare a more detailed draft for the first 500 kHz of the tuneable section of all bands.

The result is shown in Figs 1 and 2 of the diagram.

Both plans are self-explanatory, and reference should be made to the original article in October 1974 AR. However, a few points are worth mentioning. With respect to the tuneable section, it can be seen that the segment has been divided into three broad categories:

- 1—DX, 2—Local, 3—Beacons.

Calling frequencies have been nominated. Many of these frequencies are in current use. Some are new. The calling frequencies are mainly related to DX operation. However it can be seen that a second SSB/AM calling frequency has been nominated on .200. This could be known as the secondary calling frequency and would normally be used for local operation.

Calling frequencies are suggested as follows:

- CW .025
- Meteor Scatter — all modes .050
- RTTY .075
- SSB/AM .100 (primary DX calling)
- SSB/AM .200 (secondary local calling)
- SSTV .300

Beacons could be established between .4 and .5 with some overflow down to .35 allowable in certain areas.

The 70 cm Band Plan is self-explanatory. Presently the actual net frequencies and repeater input and output frequencies are being considered. The Federal Repeater Committee should soon be in a position to nominate some channels so as to get the ball rolling in this area.

Further negotiations must now take place with the APO before final approval can be granted. The Executive is hopeful that at least some channels can be agreed to readily by the APO.

Details relating to the remainder of the 6 metre and 2 metre bands will follow at a later date.

Peter Wolfenden VK3ZPA  
Chairman VHAC

## PROPOSED WIA BAND PLANS

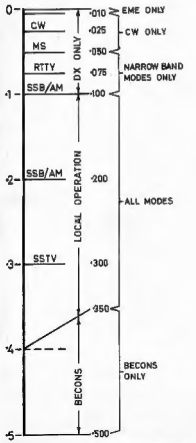


FIG 1 PLAN FOR TUNABLE PORTION OF ALL VHF & UHF BANDS

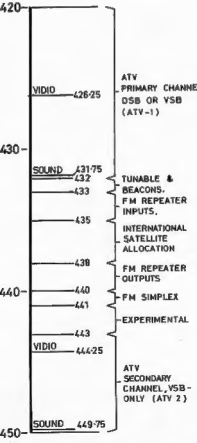


FIG 2 70 cm BAND PLAN (VHAC 9/75)

# Fantastic Offer

## Dick Smith Electronics Pty Ltd

Head Office: 160-162 Pacific Hwy, Sydney, NSW 2065  
 Tel: 02 291 1226  
 Fax: 02 291 1227  
 Branch Office: 361 Hume Hwy, Melbourne, VIC 3060  
 Tel: 03 945 1226  
 Fax: 03 945 1227

Dear Amateurs,  
 Just back from overseas  
 and look at all the goodies I've found  
 for you. Check below - you'll want  
 to see it!  
 Dick

## NEW ICOM IC22A

### ICOM IC22A 2M TRANSCEIVER

- Features:
- 146-148 MHz in 72 Channels
  - RF Out 100W/1W Switchable
  - Mode F3
  - Deviation 3-18 KHz Adjustable
  - Dynamic PTT Mic Supplied
  - 5 Helical Resonators in Front End
  - Receiver Sensitivity 4.4µV, 20dB Quieting
  - Audio Output 1.5W into 8 Ohms
  - Power Requirements 7.5V 1.5A

The IC22A is Icom's new and improved version of the very popular IC22. The IC22A is ideally suitable for home or mobile use. We are offering this unit with 3 channels, i.e. channel 50 simplex and channels 42/54 and 48/50 repeat.

ONLY \$200

(P & P Insured anywhere in Australia \$3.00).

TEN SETS TO BE GIVEN AWAY FREE

Not only is this unit to be sold at a very competitive price but EVERY purchaser will help his Division of the WIA to obtain a FREE IC22A.

For every ten units purchased, Dick Smith will donate one to your nominated Division or Club. These units are ideal for repeater use or WICEN emergency activities.



Oskier fans 200matt

### SSM EUROPA 810M - 2M SSB TRANSVERTER

The Europa 8 is a faster transmit and receive transverter 20-30MHz to 144-148MHz. It is suitable for use with either a transceiver or a separate receive/transmitter. It is ideal for Oscar operation as well as normal tropo work. Although its primary use is for SSB, it will receive and transmit any mode of which the H.F. equipment is capable: SSB, AM, CW, FSK, FM. Once attached to your H.F. equipment, you operate it exactly the same as on the H.F. bands. The Europa 8 does the rest.

\$229 (Road Freight \$3.00 extra)

NEW TAX FREE PRICE LIST NOW AVAILABLE (YES EC108 DUES FROM P3) SEND S.A.E.

## ANTENNA! FAMOUS RAK ANTENNAS



**LISTENER 1 "Y" TYPE ANTENNA**  
 Covers 2 to 30MHz with space time - completely assembled and ready for installation. Ideal for 10m reception. \$16.75 plus \$3.00 P&P

### HAM HIGH QUALITY LOW NOISE RF ET AMP MODULES

These units are designed to be simply connected between the output and antenna of any 10, 15, or 20 metre unit. You can expect maximum performance. Input impedance 50 Ohms, noise floor -130dBm, 20-30dB, operating voltage 9-12 VDC or 15 MA, 50 Ohms, 100mA or 200mA. Fully assembled & tested. Circuit supplied, only 1 connection required.  
 80M-21 IC21 21-20m 100mA  
 80M-21 IC21 21-20m 100mA  
 80M-21 IC21 21-20m 100mA

### GO ON - Help you pay for your new one of these!

275 plus \$3.00 P&P

### ECONOMY GUTTER MOUNT

100-110 ohm parallel - space mount with magnetic mounting. Suitable only as a 10m antenna. \$2.75 plus \$3.00 P&P

### LEADER RF IMPEDANCE METER

At last, an accurate, calibrated impedance meter for aerials & transmission line work. Measures impedance from 0 Ohms to infinity with accuracy over the range 100-1000 Ohms. Frequency range 1.5-100 MHz. Simple to use in conjunction with any RF signal source (G.P.G. or generator) and a 50 Ohm cable. Dimensions 170x110 x 60mm. 50 Ohm cable included. \$72.50 plus \$2.00 P&P

### AIR COIL COILS

Now there's no excuse! You can easily make antenna loading coils with our high quality air coils. Each coil is individually tested with an inductance bridge which shows it to be within 1% of the inductance value specified. This is the only air coil in the world that is guaranteed to be within 1% of the inductance value specified. If you would like a photo of these coils before buying, write and send this photo and we will send you to us. All coils are 1000mA and 100V and are fully tested before use.

100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

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100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

100-110 Ohm 100mA 100V \$2.00 plus \$3.00 P&P

### LISTENER 3

The ultimate long range, long wave dipole antenna. 8-30MHz, completely assembled with 100m cable. 100m 150V PTFE cable, insulated, extremely large 100m cable and 100m support wire. In specially designed for professional use, but also for the serious short wave listener who wishes to see. \$42.50 plus \$3.00 P&P

### NOTE

large goods can be sent. Radio frequency is payable by you. (Radio frequency on phase nominal)

### NON-INDUCTIVE 50 Ohm LOAD

This unit is a non-inductive 50 Ohm load. It is used for testing and calibration of RF equipment. It is made of high quality materials and is completely assembled. It is suitable for use with any RF signal source. \$10.00 plus \$3.00 P&P

### Make your own power meter

Make your own power meter. This unit is a simple to use power meter. It is made of high quality materials and is completely assembled. It is suitable for use with any RF signal source. \$10.00 plus \$3.00 P&P

### AMINO TOROIDAL KILOWATT BALUN KIT

Make your own kilowatt balun. This kit is a simple to use kilowatt balun. It is made of high quality materials and is completely assembled. It is suitable for use with any RF signal source. \$10.00 plus \$3.00 P&P

### \$1200 PER TSC

### AS-MOPE-2R MINIATURE 2 METRE LINEAR ANTENNA

This miniature antenna is suitable for use with any VHF signal source. It is made of high quality materials and is completely assembled. It is suitable for use with any VHF signal source. \$1350 plus \$3.00 P&P

### KSA-2 FLEXIBLE 2 METRE ANTENNA

This flexible antenna is suitable for use with any VHF signal source. It is made of high quality materials and is completely assembled. It is suitable for use with any VHF signal source. \$1050 plus \$3.00 P&P

### YAMY TRS-2 2 METRE ANTENNA

This 2 metre antenna is suitable for use with any VHF signal source. It is made of high quality materials and is completely assembled. It is suitable for use with any VHF signal source. \$1050 plus \$3.00 P&P

### Why pay over \$200 when the TRS-2 is only \$1050

Why pay over \$200 when the TRS-2 is only \$1050 plus \$3.00 P&P

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Why pay over \$200 when the TRS-2 is only \$1050 plus \$3.00 P&P

### HAM NOTEBOOK

HAM NOTEBOOK is a 128 page short notes book with 128 pages of notes. It is a handy reference for all ham radio operators. It is available for \$3.50 plus \$3.00 P&P

### JABEL ALIGNMENT TOOL PACK No. 2

A handy set for the technician and quickly noted for all the tools you need for the amateur. It is a handy reference for all ham radio operators. It is available for \$3.50 plus \$3.00 P&P

### at only \$1.25

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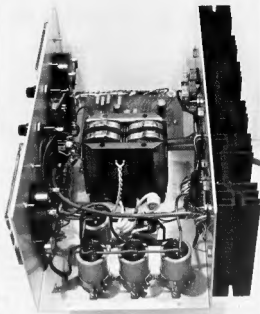
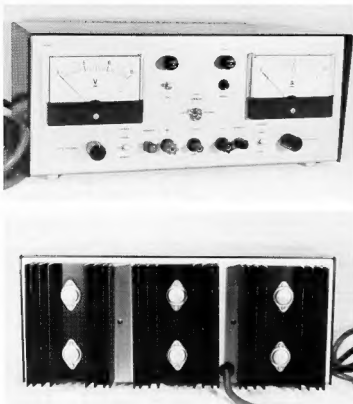
at only \$1.25 plus \$3.00 P&P





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Amateur Radio August 1975 Page 9



PRICE BREAKTHROUGH ON AUSTRALIAN-MADE UHF FM TRANSCEIVER BY

**WILLIS COMMUNICATIONS PTY. LTD.**

**\$220 WILLIS AUTOPHONE U 432-5 \$220**



**SPECIFICATIONS:**

**RF Power Output:** 5 watts (min)  
**Power Requirement:** 13.8V DC, 2A (max) — (negative ground)  
**Rx Sensitivity:** 0.5 uV for 20 dB quieting typical, 0.7 uV max.

Price includes microphone, 1 set of high quality Australian made crystals (State preference, 436.5 or 435 MHz when ordering, other frequencies 2 weeks delivery) and 90-day factory warranty. **PRICE: \$220**

**OPTIONS:**

6 channel kit	\$8
12 channel kit	\$20
6 channels, factory wired	\$20
12 channels, factory wired	\$40
10 watt version	\$40
25 watt version	\$70
Chrome mounting kit	\$10

**Weight:** 3.2kg  
**Width:** 19.6cm  
**Depth:** 20.2cm  
**Height:** 4.8cm

This 70cm transceiver is basically the same as the Willis commercial unit of which there are thousands operating mobile throughout Australia, it is not a cheap toy radio.

All prices include sales tax. Add \$8.00 to cover packing, freight and insurance.

**WILLIS COMMUNICATIONS PTY. LTD.**

**13 BISHOP STREET, KELVIN GROVE, Qld. 4059 Phone: (072) 56 8515**

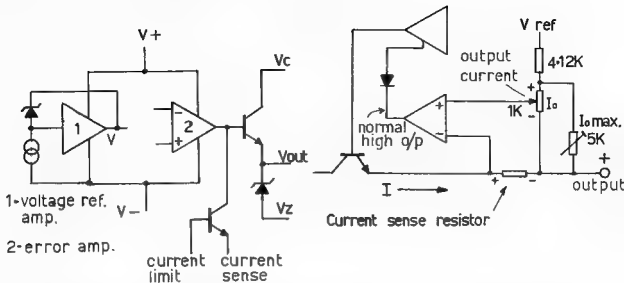


FIG. 1

The auxiliary circuit from the 25V winding is a constant voltage source, and the outputs are used as control voltages for the main regulator.

The auxiliary voltages are derived from a minor secondary winding of 25 volts at 50 mA. The AC is half-wave rectified and filtered by the 100  $\mu$ F capacitor. This voltage is fed to the supply pins ( $V_{-}$  and  $V_{+}$ ) of the  $\mu$ A723C integrated circuit. This in turn produces the reference voltage which is fed to the non-inverting terminal of the  $\mu$ A741C operational amplifier. This input causes the operational amplifier output to rise thus raising the emitter voltage of the PN3841 transistor.

The 8K2 and 10 k resistor divider cause the circuit to regulate at approximately 13 volts. Hence we have a +13V auxiliary supply with reference to the zero volt (0V) line. Also the insertion of a 5.2V zener diode as shown in the circuit allows us to derive a -6V auxiliary supply. These voltages +13V, reference volts and -6V are used as supply and control voltages for the power supply.

Fig 3 clearly shows the principle of operation for constant voltage control. The reference voltage is fed to two voltage divider networks. One divider is fixed (4K7 network), whilst the other is variable (5K6 network with 25 k potentiometer). When

the "rheostat connected" potentiometer is at zero resistance, the error amplifier will only see equal input voltages when the voltage across the power supply positive and negative terminal is zero. By adjusting the 25 k potentiometer away from zero, the input to the error amplifier is no longer balanced and the output rises causing the series pass transistor to rise, thereby producing voltage across the power supply positive and negative terminals.

This in turn biases the 4K7 divider and equilibrium is reached when the error amplifier sees equal input voltages. Hence we have a regulated supply available from the supply terminals.

Fig 4 clearly shows operation for constant current control.

The reference voltage is divided to approximately 1V across the 1 k potentiometer. This is fed to a  $\mu$ A741C operational amplifier and causes the output to remain high. As load current flows, a potential is developed across the 0.1 ohm current sensing resistor. If this potential exceeds the input from the 1 k potentiometer, the operational amplifier output falls and closes down the  $\mu$ A723C regulator via the 0A202 diode. This gives good cut-off characteristics and network switching allows

two continuously variable ranges of current control.

Remote sensing is provided and can be used when required. When the load is distant from the power supply terminals, small twin flex can be run from the load back to the supply terminals and remote sensing used to keep load voltage constant under varying load currents.

Monitoring of load voltage and current is carried out by two 0.1 mA FSD meters. The 15 k resistor gives 0.15V FSD and use of the current sensing resistor does away with shunts for measuring current. The current limit switch gives FSD meter indications 0.1 and 0.10 amps.

A "centre-off" DPDT switch enables current and voltage to be set up before applying the load.

The series pass elements are a 2N3055 driver stage controlling five 2N3055s in parallel.

The five 2N3055s are necessary due to the large dissipation evident under conditions of high load current at low to virtually zero output voltage. Each parallel 2N3055 transistor has a current sharing resistor to prevent thermal destruction.

The driver and parallel transistors are mounted two each on three 6 inch pieces of "MINIFIN" — 002.

If you are interested in building this supply, it is highly desirable to obtain the Printed Circuit Board which has been designed so that control circuits are not influenced by small potential drops occurring under high load currents. If these potentials were developed in control circuits, then regulation would be lost.

To make construction of this supply as simple and economical as possible, the Moorabbin and District Radio Club has available a complete kit of parts. This kit includes all items down to the last nut and bolt, and instructions.

Enquiries may be made to the Secretary P.O. Box 88, East Bentleigh, 3165

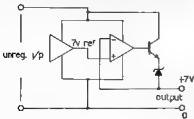


FIG. 2

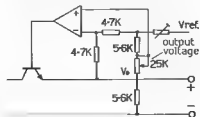


FIG. 3

## 12 month warranty\* on all ICOM TRANSCIVERS!

\* warranty excludes final transistors and damage caused by user negligence

Mode	IC-60	IC-22A	IC-21A
General			
Numbers of Semi-Conductors Employed	32	22	42
Transistors	4	4	4
FET	1	3	
Codes	20	16	37
Power Source	(Negative Ground) 13.5V ± 20%	13.5V ± 15%	240V ± 10% / 13.8V ± 15%
Current Drain	2.1A 1.2A 350mA 150mA 50 ohms 58 x 156 x 216 2 kgs	2.1A 1.2A 350mA 130mA 50 ohms 58 x 156 x 216 2.1 kgs	2.4A 1.2A 300mA 300mA 50 ohms 111 x 230 x 260 6 kgs
Antenna Input			
Dimensions H x W x D in mm			
Net Weight			
Transmitter			
Frequency Range, MHz	50-54	144-148	146-148
Band Spacing	1 MHz	2 MHz	2 MHz
Channels Crystal Controlled	12	24	24
RF Output Power, Switchable	10W as HI (high) and 1W as LO (low)		variable 0.5-10W
Mode (Phone by FM)	F3	F3	F3
Max Frequency Deviation	±5.15 KHz	±5.15 KHz	±5.15 KHz
Modulation on System	Variable Reactance Phase Modulation		
Multifunction	2 x 2 x 2	2 x 2 x 2	2 x 2 x 2
Spurious Rejection	60dB or less	-60dB or less	-60dB or less
Microphone Dynamic P.T.T.	10 K ohms	500 ohms	500 ohms
Receiver			
Frequency Range, MHz	50-54	144-148	144-148
Band Spacing	2 MHz	4 MHz	4 MHz
Mode (Phone by FM)	F3	F3	F3
Receiving System	Double Super Heterodyne System		
F 1st MHz/ 2nd KHz	10.7 & 455	10.7 & 455	10.7 and 455
Sensitivity	a Better than 0.4 µV at 20 dB quiescent b S+N/N at 1 µV input, 30 dB or more	-60dB or less	-60dB or less
Spurious Response	a ±8/±15 KHz at 6 dB point 10.7 & 455		
Band Width	a ±16/±25 KHz at 50 dB point -8 dB	1.5W	1.5W
Squeech Sensitivity			
Audio Output	8 ohm		



### 2 METRES 1M

#### IC-22A complete

with 6 channels!

- Solid State T.R. relay
- PA protect on
- 5th order resonators
- 12 month warranty
- Complete with cables, bracket, mic etc
- Extra channels \$8.50 per
- PRICE \$210 plus freight
- Package deal with DV 21 \$450

#### IC 21A

- Features
- built in ac/dc supply
- DISC/SWR/power meter included
- adjustable power output and deviation controls
- built in calibration
- 12 months warranty
- Complete with cables, mic etc
- and 3 channels 1/4/50
- Extra channels \$8.50 per
- PRICE \$298 plus freight
- Package deal with DV 21 \$570

### 6M SSB

#### IC 501

- Features
- 50-54 MHz SSB/AM/CW
- PLL VFO
- 10 Watts
- Xtal filters for AM/CW
- AC or DC operation
- size 111 x 230 x 260 mm
- PRICE \$445 plus freight



ICOM

### DV-21 PLL DIGITAL VFO \*

DV-21 DIGITAL VFO employs a P.L.L. synthesised system with 58 ICs, 34 transistors, 1 FET and 37 diodes. It can be INTERFACED with the IC22A or any 2m transceiver with 44-45 MHz rx 18 MHz tx, 10.7 MHz 1st, low side heterodyne. 8 x basic freq. for tx and 3 or 9 x basic freq. for rx. Only a slight modification is required for such equipment and is detailed in the operating manual. It operates in 5 or 10 KHz steps from 146 to 148 MHz and can scan either empty frequencies, or the frequencies being used, whichever you select. Complete separate selection of the transmit and receive frequencies is as simple as touching the keys. When you transmit, bright easy to read LEDs display your frequency. Release the mic switch and the receive frequency is displayed. These are two programmable memories for your favorite frequencies. You won't believe the features and versatility of the DV-21 unit you've tried it.

Stability: Better than ±2 x 10<sup>-5</sup>  
Power: 230 VAC ±10%  
13.8 VDC ±15% at 1.5A  
Output: 400mV (no load)  
Spurious: Better than -60dB  
Size: 111 x 161 x 261 mm  
Weight: 2.5 kg  
PRICE \$285

### IC-3PA

13.8v power supply for IC-72A IC60  
PRICE \$78

### CRYSTALS

WIA Band Plan Xtals for Icom transceivers \$8.50 per + 50c P & P

# VICOM INTERNATIONAL PTY LIMITED Manager: Peter Williams

## HF TRANSCEIVERS



5 Bands, 200 Watts Input

Atlas 210-215 solid-state transceiver, \$570  
Atlas 240V power supply, \$150  
Atlas deluxe mobile mounting bracket, \$47



Uniden 2020 (80-10m) transceiver, \$550 incl. mic.  
Uniden External (PLL) VFO \$105  
Uniden Matching Speaker \$28  
Yaesu FT101B (160-10m) transceiver, \$585  
Yaesu FV101B VFO for FT101B/E, \$102  
Yaesu FT101E (160-10m) transceiver, \$628  
Yaesu FL2100B Linear Amplifier, \$388  
Yaesu FT75B mobile transceiver, \$245 AC power supply \$50  
DC power supply \$60  
Yaesu FT201 transceiver incl. pwr. supply, \$505  
Trio TS-520 (80-10m) transceiver, \$550 incl. mic.

## 2 METRES SSB

SSM-EUROPA 8 transverter \$224  
YAESU FT220 ssb-cw-fm solid state transceiver. Price of \$445  
incl. mod to use fm repeaters. **SPECIAL**  
TRIO TV-502 transverter \$243.

## 2 METRES FM

KEN KP202 handheld 2 watts. Incls 4 chs (1-4-40-50), \$150.  
TRIO TR2200G handheld portable transceiver incl. 2 chs,  
1-50, \$150. **SPECIAL** \$130  
SEWIA SV-230 mobile rig, runs 25 watts! Price: \$210,  
includes 3 channels, mic, cables and mobile mounting  
bracket.

## SPECIAL



The Sevia SU-710 70cm fm transceiver runs 10 watts and is the ideal mobile rig. Complete with 1 channel (435.0) and mounting bracket, mic, cables etc. and VICOM 90 day warranty. Price \$278. **\$260**

**PROFESSIONAL QUALITY 2M FM RECEIVER MODULE**... Ideal as an auxiliary monitor for the shack or to keep the XYL posted (perhaps not a good idea!), this kit comes complete with a single channel oscillator and a premium grade 11 element ladder filter. The price of \$69.50 includes prefabricated fiberglass pcb, all components, if crystal, filter, instruction manual. Add \$1 P & P. **\$69-50**

## ANT. ACCESSORIES

ME-UA UHF POWER METER \$69  
AS-GM gutter damps 2m \$7.50  
SH-7E lightning arrester \$14.80  
CO-AX 58u 45c per m  
RB 2m mast amp (144-146 or 146-148) \$32  
Rotator - CDR ham II 240v \$165.



**MONITOR SCOPE.** The YAESU YO-100 monitor scope can be interfaced with most transceivers and can cover a wide range of modes incl. RTTY. A two tone built-in generator at 1500 and 1900 Hz adds to the versatility. Price: \$190.  
YAESU frequency counter \$250. Covers up to 200MHz max. sensitivity 20mV, hi- $\Omega$  input impedance.

## ANTENNAE

**MOBILE WHIPS:**  
RM-80 Resonator for 80m. \$18.50  
RM-40 Resonator for 40m. \$16.80  
RM-20 Resonator for 20m. \$13.50  
BM-1 Bumper mount \$13. Spring \$13.  
HY-GAIN  
203BA 3el 20m beam \$168  
TH6DX 6el yagi 10-15-20. \$225  
TH3JR 3el yagi 10-15-20. \$135  
18AVT trap vertical 80-10. \$90  
14AVQ trap vertical 40-10. \$65  
**VHF ANTENNAE**  
LINDENOW 2m 5/8 whip \$21, base \$2.80.  
RINGO ARX-2 6db 2m gamma matched vertical, \$35.  
Extension kit to improve gain of the old AR-2, \$12.

Vicom now have a range of suppression kits for the mobile enthusiast, including dc line filters, alternator and generator kits, ignition suppression kits and electroshield kits for the tough jobs.

## SAFETY MIKE

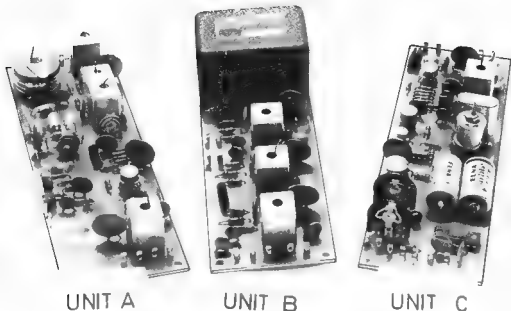
MICROPHONE HEADSET  
for driving safety \$34



## Distributors

**A.C.T.:** Andrew Davis, 32 Kalgoorlie Crescent, Fisher.  
Phone: (062) 88-4899.  
**QLD:** DB Electronics, 21 Christine Ave., Miami.  
Phone: (075) 35-1798  
**S.A.:** Graham Stallard, 27 White Avenue, Lockleys.  
Phone: (08) 43-7981.  
**Geelong:** Phil Fitzherbert, Phone: (052) 43-6033.  
**Newcastle:** Digitronics, 188 Parry Street, Newcastle.  
Phone: (049) 69-2040.  
**W.A.:** Netronics, 388 Huntriss Avenue, Woodlands.  
Phone: (092) 46-3232.

**Head Office .... 139 AUBURN RD. AUBURN, VIC 3123. 82-5398**



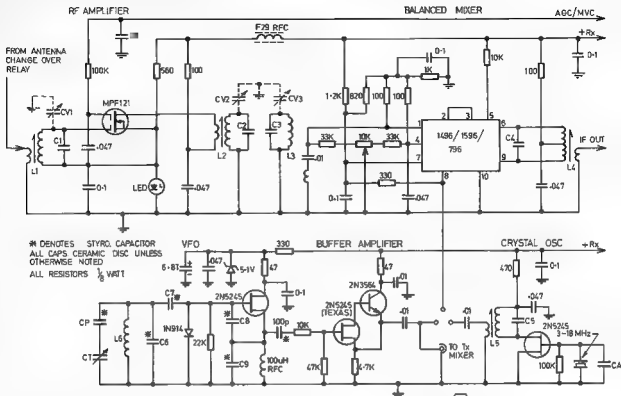


FIGURE 2 - UNIT A - CIRCUIT DIAGRAM

Since a dual gate MOSFET likes to see a low impedance drain load (it is only the gates which have high input impedance) link coupling is used to L2/C2. L2 is mutually coupled to L3/C3 and a further link on L3 provides the necessary low impedance output required by the signal ports of the balanced mixer.

### (ii) The Mixer

The mixer is a Motorola 1496 or its less costly Fairchild equivalent, the 796HC.

Both are in TOS 10 pin packages. Other manufacturers market electrical equivalents that can be used provided they are pin compatible.

Oscillator feedthrough is minimal even with no variable balancing arrangement and there is no significant output at the fundamental of either input frequency. This characteristic makes for a clean, noise free output. The 10 k trimpot allows the device to be balanced for minimum oscillator feedthrough.

The output transformer L4 is bifilar wound and is resonated by C4. A link wound over the centre of L4 provides a low impedance output.

As mentioned with respect to C1, both C2 and C3 can be wholly or partially replaced with an external variable capacitor if a "peaking" control is wanted or if a large signal frequency range is to be covered.

Coils L1, 2 and 3 are wound on Neocad 722/1 formers (obtainable from Neocad,

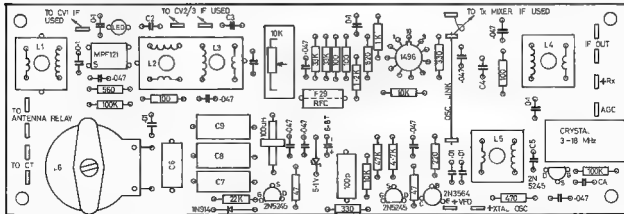


FIGURE 3 - UNIT A - COMPONENT LAYOUT

# VK 2 AVA INTRODUCES THE OUTSTANDING **UNIDEN TRANSCEIVERS**



**MODEL 8120**

**MODEL 2020**

**MODEL 8010**

**UNIDEN CORPORATION of JAPAN**, an old established manufacturer of commercial communications equipment, has just entered the field of amateur transceivers and is introducing an all-band 80 to 10 M. coverage AC-DC transceiver with many novel features, amongst others:

PAIR of 6146-B tubes in the final stage with high voltage Zener diode, stabilizing the screen voltages to the 6146's, resulting in minimum distortion products and a very clean output signal

SEPARATE USB and LSB and CW 8-pole crystal filters as standard and no frequency change when going from USB to LSB.

PHASED LOCK LOOP oscillator circuitry, maximum stability.

INDEPENDENT r.f. circuitry for transmitting and receiving, no compromise common circuits.

MAXIMUM accessibility to plug-in PCB modules, even the front panel can be swung out for easy servicing should this be required.

CONTINUOUS RF attenuator with up to 70 db. maximum attenuation.

DUAL-RANGE R.I.T. control (clarifier) with either 5 KHz or 1 KHz plus and minus frequency control

100 KHz VFO Range, with push-button selection of each 100 KHz frequency coverage

Many more features, no front-end overloading on even the strongest signals, matching external VFO and speaker units available, in all combining the better things of competing products at a lower price.

**Will be introduced during AUGUST, 1975, for just \$550**

All prices quoted are net SPRINGWOOD, N.S.W., cash with orders, sales tax included in all cases subject to changes without prior notice. No terms nor credit nor COD facilities, only cash and carry, no exceptions. All risk insurance available for 50 cents per \$100 value, minimum insurance charge 50 cents. Allow for freight, postage or carriage, excess will be promptly refunded. **MARY & ARIE BLES, Proprietors.**

## **SIDE BAND ELECTRONICS SALES and ENGINEERING**

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# SIDEBAND ELECTRONICS SALES and ENGINEERING

## UNIDEN

Model 2020 de-luxe all-band AC-DC transceivers	\$550
External VFO model 8010 for the 2020	\$100
External speaker for model 2020	\$25

## TRIO-KENWOOD

Model TS-900 de-luxe all-band transceivers, with PS-900 AC supply-speaker unit	\$800
Model TS-520 AC-DC transceivers all band	\$530
Model TV 502 2 Mtr transverter for TS-520	\$200
QR-666 all-band coverage receiver 170 KHz-30 MHz	\$300

## YAESU-MUSEN

Latest model FT-101-E AC-DC transceivers with genuine RF clipper-speech processor	\$650
Model FT-200 transceivers with FP-200 AC unit	\$400
Model YC-355-D digital frequency counters 0-200 MHz	\$250
SPECTRONICS DD-1 digital counter for FT-101-B-E	\$150

All UNIDEN, TRIO-KENWOOD & YAESU MUSEN transceivers come complete with original English manuals, all crystals for all available bands and a P.T.T. dynamic microphone. Sorry, no more free SWR Meters.

## HY-GAIN ANTENNAS

14AVQ 10-40 M. verticals 19' tall, no guys	\$65
18AVT-WB 10-80 M. verticals, 23' tall, no guys	\$90
TH 3 JR 10-15-20 M. junior 3 el Yagi 12' boom	\$135
TH 3 Mk 3 10-15-20 M. senior 3 el Yagi 14' boom	\$180
TH 6 DX 10-15-20 M. senior 6 el Yagi 24' boom	\$225
204 BA 20 M. monoband 4 el. TIGER YAGI 26' boom	\$190
HY-QUAD 10-15-20 M. full size Cubical Quad	\$200

## CDR ANTENNA ROTATORS

AR 22 for 2 and 6 M. and small HF beams	\$50
AR 20 for 2 and 6 M. beams	\$40
HAM-II with re-designed control box	\$150
All three models for 230 V AC complete with indicator-control units	
4-conductor light cable for AR-20-22	20 cents per yard
12-conductor light cable for HAM-II	30 cents per yard
8-conductor heavy duty cable for HAM-II	60 cents per yard

## BARLOW-WADLEY RECEIVERS

Model XCR-30 Mk II 500 KHz to 31 MHz continuous coverage portable communications receivers, crystal controlled reception of AM-USB-LSB-CW	\$275
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## POWER OUTPUT METERS

Galaxy RF 550A with 6 position coax switch	\$75
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## S.W.R. METERS

Midland twin meter model for 52 Ohms, up to 1 KW on HF	\$22
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## BALUNS

New Japanese model, 75 Ohms impedance 1 KW PEP	\$10
--	------

## MARK MOBILE ANTENNAS

Helical 6' long	HW-40 for 40 M.	\$18
	High power KW-40 for 40 M.	\$25
	HW-20 for 20 M.	\$16
	Tri-band HW-3 for 10 15-20 M.	\$25
Swivel mobile mount & chrome plated spring for all		\$12

## ASAHI MOBILE ANTENNAS

Model AS-303A set of 5 whips 10 to 80 M. complete with ball spring and mount	\$90
AS-2-DW-E 1/4 wave 2 M. mobile whip	\$8
AS-WW 1/4 wave 2 M. mobile whip	\$15
AS-GM gutter clip mount with cable and connectors	\$10
M-RING body mount and cap for 2 M. whips	\$5

## COAX CONNECTORS

VHF types PL-259, angle and T-connectors RCA male to SO 239 type female, all models	\$1 each
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## CUSH CRAFT ANTENNAS

Model DGPA 52 to 27 MHz adjustable ground plane	\$25
LAC-2 lightning arrestors	\$6
Model AR-2 RINGO 1/4 wave verticals	\$20
AR-2X RINGO double 1/4 wave verticals	\$35
ARX 2 extension for AR-2	\$15
A147-20T combination vertical-horizontal 2 M. Yags, 10 elements each	\$60
A147-11 11 elements 2 M. Yagi	\$30

## CRYSTAL FILTERS

9 MHz similar to FT-200 ones, with carrier x'tals	\$35
---	------

## POWER SUPPLIES

240 V AC to 12V DC 3 A. regulated overload protected	\$35
--	------

## FDK MULTI-7

2 M. FM transceivers, 10 W output, now with 12 Aussie channels crystals, 40 to 60, including channels 43 and 45 includes all repeaters and anti-repeater use, still	\$225
---	-------

## KEN PRODUCTS

KP-202 2 M. hand-held transceivers with 6 channels	\$150
KCP-2 charger for KP-202 with 10 NICAD batteries	\$35
Stubby flexible whip for KP 202	\$6
KP-12A speech processor, self contained 240 V AC	\$100

## KLM ELECTRONICS

Solid state 12V DC 2 M. amplifier, 12W output, automatic antenna change-over when driven, ideal for mobile use with the KP-202	\$50
--	------

## NOVICE LICENSEES EQUIPMENT

5 W AM 23 channels 27 MHz transceivers with P.T.T. mike	\$95
5 W AM 15 W SSB 23 channels transceivers with P.T.T. mike	\$175

Dick Smith Electronics, WIA Components Committee and some supply houses) and use F16 or F29 self-locking tuning slugs. All coils use screening cans obtainable from the same sources.

L4 (at least at the higher IF frequencies) can also be wound on a Neosid former. However, at an IF of 455 kHz, the coil is a little difficult to wind and a standard 11 mm 455 kHz replacement type transistor broadcast transformer can be used instead. The PCB is laid to accommodate either type of coil.

If required, the RF stage and its associated components (including the 100 ohm HT decoupler and its associated 0.047 mfd capacitor) can be omitted. The drain end of the input link on L2 then becomes the antenna input and a wire across the two holes originally occupied by the 0.047 decoupling capacitor earths the other end of the link.

TABLE 2.1 — RF/MIXER COIL DATA

Freq. MHz	L1 - L2		Wire Size		Slog Type	C1-C8 pf
	Primary Turns	Link Turns	A.W.G. En.	DIA. Ins.		
1.5	75	10	37	0.0045	F16	470
3.5	50	5	37	0.0045	F18	150
5.0	35	4	32	0.008	F18	150
7.0	30	3	32	0.008	F16	100
9.0	28	3	32	0.008	F16	100
10.7	20	3	32	0.008	F20	100
12.0	20	3	32	0.008	F20	82
14.0	20	3	32	0.008	F20	47
18.0	20	3	26	0.016	F20	47
21.0	20	3	26	0.016	F20	33
28.0	20	3	26	0.016	F20	15

## Notes

- AI coil is close wound on Neosid 722/4 former using specified American wire gauge (or closest SWG equivalent) enamelled wire
- Links for L1, 2, 3 and 5 are wound over the "cold" or earthy end of the tuned winding.
- L4 is wound bifilar. For example, at 8 MHz L4 is two 13 turn windings or 26 turns total. The link is wound over the centre of the tuned winding
- L4 for 485 kHz can be a centre tapped 10 mm broadcast replacement IF transformer.

### (15) The VEO

Using single conversion places some restriction on the VFO if reasonable stability is to be achieved and intermediate heterodyning of the VFO to a high injection frequency is to be avoided.

Using the Amateur bands as an example, the following VFO ranges will be required

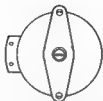
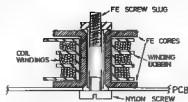


FIGURE 4  
L6 COIL ASSEMBLY

for 180 metres through 15 metres at various IF frequencies.

TABLE 2.2

Band	Signal Frequency MHz	L.F. MHz	VFO Frequency MHz
180	1.8-1.86	9.0	7.2-7.14
	"	10.7	6.8-1.84
	"	5.0	3.2-3.14
	"	0.455	2.255-2.315
80	3.5-3.7	9.0	5.6-5.3
	"	10.7	7.2-7.0
	"	5.0	1.5-1.3
	"	0.455	3.955-4.155
40	7.0-7.15	9.0	2.0-1.85
	"	10.7	3.7-3.55
	"	5.0	2.0-2.15
20	14.0-14.35	9.0	5.0-5.35
	"	10.7	3.3-3.95
	"	5.0	9.0-9.35
15	21.0-21.45	9.0	12.0-12.45
	"	10.7	10.3-10.75
	"	5.0	10.3-10.75

Thus, in order to give as wide a choice of signal and IF frequencies as possible, the VFO circuitry used must enable frequency segments to be selected in the

range 1.3-12.5 MHz. The circuit adopted is given in Figure 2 and component layout in Figure 3. Note that capacitors used in the oscillator proper (C8-C9 and the 100 pF output coupling capacitor) are styro-seals and are so marked on the circuit diagram. The FET oscillator is a 2N5245 and has its collector supply regulated at 5.0 volts. The FET/Bipolar buffer provides both isolation and a very low output impedance. The Texas Instruments 2N5245 was used but other HF fets can be substituted provided they are pin compatible. The writer has used MPF102z and 2N3919s in this circuit but the board layout is specific to the TI2N5245 or the MPF102.

The coil form used is a Neosid (23-25 Percival St., Lilyfield, NSW 2040) Type A1 assembly. This assembly consists of a three section plastic winding bobbin enclosed in two mushroom shaped powdered iron shrouds. The core and shrouds fit over a threaded nylon cylinder containing a powdered iron tuning slug. The whole assembly is held together and to the PCB with a nylon bolt. See Figure 4.

The tuning capacitor CT is a 100 pF (nominal) variable. Either the Eddystone Type 585 or Jackson Brothers Type C804/100 pF are very suitable and are stocked by William Willis (77 Canterbury Rd., Canterbury, Vic. 3126).

The capacitor swings required to cover the Amateur bands are given in Table 3 and a styrofoam capacitor (CF) is used to restrict the tuning range to that required. Note that both tuning capacitor and series padding capacitor are not on the PCB but should be firmly mounted close to it and the inter-connects kept as short and stiff as possible.

Table 4 gives the VFO coverage to be expected using various coil windings and resonating capacitors. This data will be useful if either a wide signal frequency range or frequency segments other than the amateur bands are of interest.

#### (iv) The Crystal Oscillator

**(iv) The Crystal Oscillator**  
To increase the flexibility of Unit A, on board provision is made for a simple FET crystal oscillator. It uses fundamental mode parallel resonant crystals. The board layout allows for either Style D or Style K

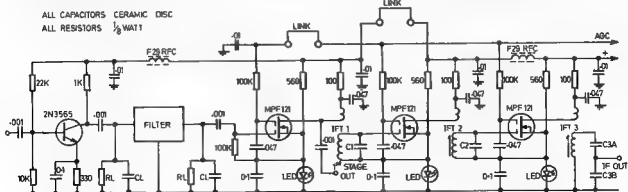


FIGURE 5 - UNIT B - IE FILTER AND AMPLIFIERS

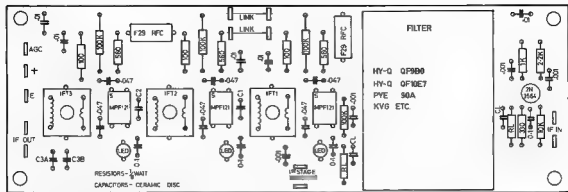


FIGURE 5 - UNIT B - COMPONENT LAYOUT

crystals and a fixed capacitor (CA) for fixed adjustment to the crystal frequency. CA may be replaced by a 3/30 pF trimmer for more precise adjustment of the crystal frequency if so desired.

L5 is resonated with C5 at the crystal frequency and the output link coupling uses, to the nearest turn, one eighth of the number of turns on the tuned winding. Representative coil/capacitor data is given in Table 2.5 below.

Having provision for a crystal oscillator means that the module can be used as an HF converter, the VFO not being used. Alternatively, both VFO and crystal oscillator can be used to provide tuned or fixed frequency operation of a receiver or transmitter. A third possibility is to use both VFO and crystal oscillator in Unit A, mix them together in the signal frequency mixer of Unit D (described later) to provide the higher injection frequencies needed to cover, say the 28 to 30 MHz band.

TABLE 2.5 — REPRESENTATIVE DATA FOR LS/C5

Crystal Frequency MHz	Turns	AWG	Core	C5
5	30	32	F18	320
8	30	32	F16	160
9	26	32	F16	100
12	20	32	F29	100
18	20	26	F29	47

## 2B — Unit B — SSB/CW/AM IF AMPLIFIER

The circuit diagram is given in Figure 5 while the component layout is given in Figure 6. Table 2.6 gives coil data.

A 2N3564 input stage is used primarily to provide an impedance match to the input of the filter. The stage does give a voltage gain of 2 or 3 at 9 MHz and somewhat more at 455 kHz.

Output from the filter is amplified by a three stage discrete component amplifier using MPF121s or equivalent dual gate MOSFETs. The three stages are identical and are AGC controlled.

As in the case of the RF amplifier in Unit A, the sources are kept at a constant voltage by using a LED as a low voltage zener and the signal gate returns being made to source and not directly to earth.

Since this system allows stage gain to be reduced to zero by taking gate 2 to near earth potential, the AGC action is very much enhanced and is known to be in excess of 120 dB.

An offtake is provided from the drain of the first MPF121 to allow a double side-band signal from a balanced modulator to be amplified and stripped of one side-band before passing to a subsequent mixer to produce a signal frequency SSB output. Suggested off board switching to do this is given in Figure 4.

The PCB is laid out so that most of the popular filters on 5.0, 9.0 or 10.7 MHz can be used. The Hy Q filters type QF900 (9 MHz) or QF10E7 (10.7 MHz) are available from their Australian makers at 10-12 Rosella St, Frankston, Vic. 3199 or their interstate agents. The board will also accept the KVG range of filters which are advertised in local journals as being available from overseas. Other filters such as the (now discontinued) Pye 90A will also fit the PCB but the Collins 455 kHz range of mechanical filters are too long to fit the board unless mounted vertically.

The two resistors marked RL and the two capacitors marked CL are normally specified by the supplier. The HyQ QF900

requires terminating impedances of 500 ohms and 30 pF. The 1000 ohm collector load of the 2N3564 first stage is effectively in parallel with the input of the filter so that the actual value of RL put on the board will be 1000 ohms and CL will be 30 pF minus circuit strays or say 22 pF. The output CL will also be 22 pF but the output RL will be 650 ohms. Other terminating R and C values can be established bearing these points in mind. If a 455 kHz Collins mechanical filter is used both input and output CL will be 120 pF, no output RL will be needed and the input RL will have to be put in SERIES with the 1000 pF coupling capacitor and not between filter input and earth.

For 5.0, 9.0 and 10.7 MHz IFs the inter-stage transformers may be wound on Nec-sid 722/1 forms. Coil and capacitor data is given in Table 2.6. For a 455 kHz strip, use may be made of either 7 mm or 11 mm replacement type transistor broadcast transformers. Those having a low impedance output link (i.e., white or yellow codes) are suitable. The PCB is laid to accept all three coil types.

If a commercial unit on 455 kHz is used for IFT 3 then it will have to be modified by removing its internal resonating capac.

TABLE 2.3 — VFO CONSTANTS FOR AMATEUR BANDS

Band	Signal Freq. MHz	IF MHz	VFO Freq. MHz	Turns	L5 AWG	CT	Capacitance in pF CP	CS	C7	C8	C9
160	1.80-1.86	9.0	7.2-7.14	9	22	100	22	120	100	680	330
80	3.50-3.70	9.0	5.5-5.3	9	22	100	33	270	100	680	330
40	7.00-7.15	9.0	2.0-1.85	24	22	100	330	150	330	1000	1000
20	14.00-14.35	9.0	5.0-5.35	9	22	100	150	270	100	680	330
15	21.00-21.45	9.0	12.0-12.45	6	22	100	33	100	100	330	180

TABLE 2.4 — VFO CONSTANTS FOR WIDE TUNING RANGES

VFO Frequency Coverage MHz	No. Turns	AWG	CT (Rehlin)	CP	CS	C7	C8	C9
1.5-2.4	34	22	10-415	NII	47	330	1000	1000
2.0-3.3	18	22	10-415	NII	47	330	1000	1000
3.1-4.8	12	22	10-415	NII	47	330	1000	1000
4.3-8.5	9	22	10-415	NII	47	100	680	330
6.5-14.0	6	22	10-415	NII	47	100	330	180

### Notes

- (1) Coil turns equally distributed in all three coil former sections.
- (2) For wide band tuning C9 can conveniently be a 60 pF trimmer.
- (3) Coil inductance adjustment allows correction for normal capacitor tolerances.

# The value-packed commercial quality PFT-203 TRANSCEIVER for 2 m FM

## 25 CHANNELS 30 WATT



The model PFT-203, originally designed for marine use in America, is a 30 watt plus, 25 channel mobile FM transceiver for the 2m amateur band. It is compactly housed in a metal cabinet of attractive appearance. The IF amp frequencies are 10.7 MHz and 455 kHz, clear of HF amateur bands to reduce interference to a minimum. Excellent selectivity is assured by the use of a 2 pole crystal filter and three ceramic filters! A low pass filter is included in the antenna circuit for both transmit and receive.

Incorporates power level adjustment and automatic SWR protection which does not cut the transmission on high SWR but reduces power according to SWR deficiency. Thus you can still transmit even with a relatively poor SWR... good for emergency, etc. situations.

The use of a large area heat sink and PA transistor with power dissipation of 70W help to ensure trouble-free operation under arduous conditions. One channel provides priority "call-channel" operation. Enables you to flick over to your favourite pre-determined Channel without altering the main channel selector switch.

### TECHNICAL DATA OF PFT-203

#### GENERAL

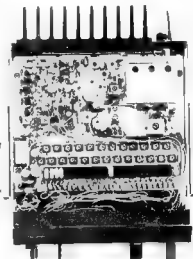
Frequency Coverage	140-170 MHz, factory adjusted to the 2m band
Number of Channels	24 Channels plus 1 memory channel
Maximum Bandwidth per Unit	2 MHz
Mode	F3 (Phase Modulation)
Power Source	13.5V DC ( $\pm 10\%$ ) Negative Ground
Power Drain	Receive 0.3A Transmit 5.0A/25W 1.2A/ 1W
Operating Temperature	-20°C to +55°C
Antenna Impedance	50 ohms
Microphone	Dynamic 500 ohms
Dimensions	61 mm (H) x 166 mm (W) x 215 mm (D) or 2 1/2" x 6 1/2" x 8 7/16"
Weight	2.2 Kgs or 4.8 lbs.

#### TRANSMITTER

Power Output	30 Watts or 1 Watt, switchable (max.)
Modulation	Variable capacitance phase modulation
Multiplications	12 Times
Frequency Deviation	12.5 kHz max (adjustable)
Harmonics Spurious Radiation	2uW or less
Adj. Chann. Radiation	2uW or less
Frequency Stability	Not exceeding $\pm 0.001\%$ (-20°C to +50°C)
Mod. AF Response	0.3 to 3 kHz $\pm 6$ dB/Octave

#### RECEIVER

Receiving System	Crystal controlled double superheterodyne
Frequency Stability	Not exceeding $\pm 0.001\%$ (-20°C to +50°C)
Intermediate Frequency	1st IF: 10.7 MHz 2nd IF: 455 kHz
Sensitivity	0.5 uV or less at 20 dB QS
Selectivity	$\pm 10$ kHz at -8dB, $\pm 20$ kHz at -80dB
Spurious Response	Greater than 50 dB
Spurious Radiation	0.002 uW or less
Intermodulation	At least 75 dB down at $\pm 25$ kHz separation
Audio Output	1 Watt (less than 10% distortion)



**FURTHER STOCKS ARRIVING.** Comprehensive range of spares in stock. **PRICE \$218** (special for this month) includes crystals for B and one repeater channel (1, 2, 3 or 4), microphone, mobile mount, etc. Extra standard channels 50, 51, 1, 2, 3, 4 \$8.00 each. Prices include Sales Tax. Freight or postage and insurance extra (allow \$4.50). All sets pre-sales checked and covered by our 90-day warranty. Prices and specifications subject to change.

AUSTRALIAN AGENT



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Ph. 60 4378

tor and noting its value (usually 330 pF). The next highest value in the preferred range is entered on the board at C3A and a capacitor having about 8-10 times the value of C3A placed at C3B. It may be necessary to trim C3A a little if the tuning core will not peak the signal.

The chokes marked "F29" are simply Neosid 12 mm F29 tuning slugs with a single wire passing through the central hole. Output at low impedance is taken from the junction of C3A and C3B.

In conjunction with the product detector AGC and audio of Unit 3 the IF strip has a measured sensitivity of 3 microvolts for a discernible CW a gna. Its AGC range is in excess of 120 dB.

TABLE 2.6 — COIL DATA

Frequency MHz	Primary Turns	IFT 1, 2, 3 AWG	Link Turns	C1,2,3A pF	C3B pF
5.0	35	32	9	150	1500
9.0	25	32	7	100	1000
10.7	25	32	7	68	680

#### Notes

- (a) All coils are a close wound on Neosid 722/1 formers.  
(b) Links are wound over the cold or earthy ends of the tuned windings.

## Section 2 — Unit C —

### AM/SSB/AUDIO/AGC

Figure 7 gives the circuit diagram covering all the functions available, while Figure 8 gives the component layout on the 6 in. x

2 in. PCB.

Note that only those functions required need be incorporated, the components associated with unused functions simply being omitted.

Each on board function will now be separately described.

#### (i) AM Detector

A simple voltage doubler type of detector uses two germanium diodes. IF is fed to the diodes via the 0.1 capacitor and the demodulated output appears across the 22 k load resistor. This resistor is decoupled for RF, but not for audio, by the 100 pF capacitor in parallel with it. An 0.1 mfd capacitor takes the resulting audio to output on the PCB.

#### (ii) The Product Detector

A Motorola 1496/1596 or Fairchild 796HC TO5 IC is used in a configuration suggested by the manufacturers save that the biasing has been modified to allow a single HT supply rail to be used. Oscillator input is fed to pin 8 of the IC while the SSB or CW signal from the IF strip is fed to pin 1. Note that both these entry ports require a low impedance source. Oscillator input Varmer balancing is not used, approximate (and sufficient) balance being provided by the circuit shown. Audio output is well filtered before being applied to a 741 op amp.

As shown the 741 has a gain of just under 50 in order to supply sufficient drive

to the AGC rectifier diodes. This order of amplification is in excess of that required to drive the LM 380 audio chip so that a dropping resistor is used in series with the 10 k audio volume control. The value of this dropping resistor is shown as 47 k in the circuit diagram but can be varied to suit other audio amplifiers, or other conditions, should it be necessary. The value of this resistor can be in the 10 k to 100 k range.

#### (iii) The BFO

This is a simple FET oscillator with provision for adjustment of the crystal oscillating frequency on to the correct portion of the filter slope. Either a USB or LSB crystal can be used but not both, unless external crystal switching is used. L7/C7 are resonant at the crystal frequency and coil and capacitor data are the same as those given in Table 2.6 except that the link coupling is about one eighth of the number of turns on the tuning winding.

Provision is made on the board for a separate BFO oscillator offtake so that its output can be used elsewhere — say, for example, to feed the transmit mixer of Unit D and/or the logic of a digital dial.

#### (iv) The AGC Generator

The full output from the 741 audio pre-amplifier is taken via the 0.1 coupling capacitor to a voltage doubler rectifier using two germanium diodes. The DC resulting from the rectification of the applied

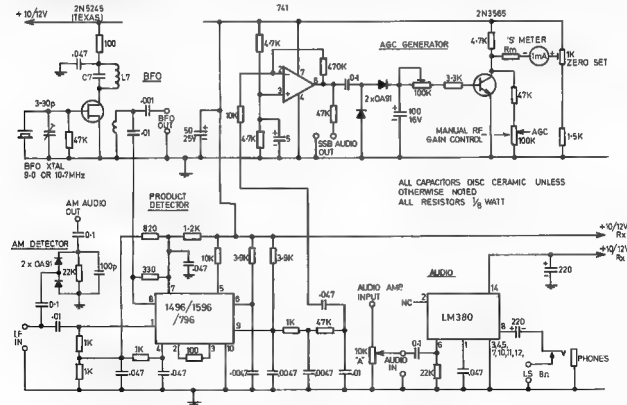


FIGURE 7 — UNIT C — BFO / PROD DET / AUDIO / AGC

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### LET'S KEEP IT CLEAN!

No, I am not going to relate a few doubtful jokes; instead I think it's time we took a look at methods of cleaning up the dirty appearance of that pride and joy transmitter sitting over there on the bench.

It seems to be a sad fact of amateur life that our friend the average amateur operator never bothers to clean his rig. Mind you, he probably cleans his car with great care every weekend.

Deterioration in appearance of a modern amateur rig is a slow but sure process, much faster if you happen to be a smoker. Incidentally, having looked at dozens of receivers, transceivers and transmitters over the years, there is no doubt that a smoking amateur will have more trouble with his gear than his non-smoking compatriots. The by-products of cigarette smoke will firstly discolour the front panel, fog up the dial and meter faces, and finally work their way into valve sockets, relay contacts and even into the bearings of VFO tuning capacitor. It forms a sticky coating over valves and, in conjunction with dust, forms a substance that will reduce the efficiency of a final stage to a marked extent.

## Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

### BELONGING TO THE WIRELESS INSTITUTE OF AUSTRALIA

Should you belong to the WIA? Some will say — belong to that organisation? — not on your life; others will say that not to belong is sacrilege, you're letting the side down. Some people are very anti-Institute without cause, using a manufactured reason/excuse. There are others equally blessed to the other extreme who believe that the Institute can do no wrong, and refuse to listen to reasoned argument about the deficiencies of the WIA. It should be most apparent that with lack of willing people on Council, or on various committees, the system is not working as it should or could.

If you, as a newcomer, think that you have no right to stick your nose into the affairs of the Institute how wrong could you be. As a newcomer your view could be just what is wanted to get some line of action going in the right direction. Sometimes, if we have been close to something for a long time, we do lose our ability to be objective. We get in a rut and the system runs down. This is one of the reasons

However, let's start at the beginning; the microphone. If you use a typical curly-cord type push-to-talk microphone, possibly the cord has stretched so that it is now a series of elongated curves instead of its original shape. First clean the cord with warm soapy water and an old soft tooth brush. Even if you are a normally clean type, the amount of dirt that comes off will amaze you. Now just rewind the cord back on its self turn by turn. This will re-tension the cord to like new condition. Incidentally, this operation can be carried out several times before the cord finally has to be replaced. As for the microphone, remove the insert and wash the case in soapy water, again using an old toothbrush to remove the dirt from all corners.

Now to the set. Remove the cabinet. Once again we will use the soapy water method but this time use a soft nail brush. This is very effective on crackle finish surfaces as even in very clean surroundings, dust will settle in to the minute indentations of the surface. Often a good wash is all that is needed to restore the finish to its original condition; however, if you are the fussy type, apply a small quantity of wax and brush it up with a white shoe type brush. One of the many aerosol furniture polishes such as *Mr Sheen* are easy to use. Now, if the cabinet has a smooth finish such as you find on Yaesu equipment, the lustre can be restored with an

application of one of the auto polishes with a slight cutting action. Even one of the mild brass polishes is good. Finish off with wax and polish with a soft cloth.

For dusting the chassis and the components on it, a small paint brush is ideal. If you happen to have a harmonic at kindergarten, the round paint brushes used there fit well between closely packed parts. If the dust will not yield to a dry brush apply a little carbon tetrachloride or some contact cleaner. If you have compressed air available, or even a blowing attachment for your vacuum cleaner it is great for blowing dust from variable capacitors and other nooks and crannies.

The front pane is best attacked by removing the knobs and then cleaning with applications of spray wax, then finishing with a soft cloth. The knobs are often the dirtiest part of the front. While they are off, soak them in warm soapy water for a few minutes and then use the old tooth brush to remove the dirt.

While you have the knobs off it's a good time to check that the nuts that hold the various controls to the front panel are tight. If you carry out the above procedure every twelve months at least, it might save you buying a new rig—the old one will look too good. It will also improve the resale value to quite a marked extent. Try it and you will be delighted.

that some people use for not joining the Institute, or WIA or whichever term you wish to name our organisation. It is not a good reason to say "I won't join the Institute, because they do this that and the other wrongly". You should get in there and CORRECT what you think is wrong or at least give it a good try.

Many people ask, "What is there in the Institute for me?" If you are prepared to do nothing, ultimately there will be nothing for you — for instance possibly no bands to operate on. How come, you say. Simple. If you don't support the WIA, with its evident faults notwithstanding, we as a country will not have representation at Geneva in 1979. The commercial concerns — ever hungry for new frequencies to exploit — will be there and they will have done their homework well, and may be able to prove that the amateur bands are not being used and that they (commercial) can use them VERY effectively. Is that what you want? If so, don't belong and don't help, and in a few years your expensive gear will have no value because you will not be able to use it.

There are many other reasons for belonging to the Institute not the least being that you receive the best amateur radio magazine in the Southern Hemisphere.

There are many other benefits not quite so obvious. Okay, you say. Why preach to me. Well, there are as many non-members as members, so why not try and get your friends to join. After all, why should they reap the benefits of what you are paying for, when it could mean that your subs could be lower for one thing.

I am most critical of some aspects of the operation and aims of the Institute but you will, notice I am still a member.

### NOVICING

As I write this at the end of June, the Novice Amateur Examination has not been held — to the disappointment of 832 candidates throughout Australia — according to the Institute insert. No news at this time as to when the initial exam will take place but possibly it will have taken place by the time this appears in print. In retrospect it may have been a welcome delay for some so that they could get their Morse code up to scratch — the sample theory paper looks fairly simple so that may not be a worry to many and the regulations exam is of the normal standard.

### A 10 WATT NOVICE TRANSMITTER FOR 3.5 MHz

The series of articles on the novice transmitter will probably commence next month. The transmitter is described over two parts, the first part is the RF section complete to the point of operating on CW. It has a single valve, a 6GV8 a television vertical section type, with the drive as a Pierce oscillator feeding into the pentode as a class C power amplifier. For operator convenience the transmitter uses a semi-break-in method of keying — In other words as soon as you work the key the transmitter goes into transmit cutting off the receiver and when the key is released the transmitter changes back automatically after a short period to stand-by with the receiver operating. This is a much less tedious method of changeover than mechanically operating a switch. This requires

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Accommodation bookings should be finalised by 8th August. After that date we'll do all we can, but cannot guarantee accommodation

A deposit of \$10 should accompany all accommodation bookings

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Pass Band Ripple	← < 7 dB →			← < 1 dB →			< 2 dB
Insertion Loss	< 2.5 dB	< 3.5 dB	< 4.5 dB	< 4.5 dB	< 4.5 dB	< 3 dB	1.5 dB
Input Output	820 Ω	910 Ω	2000 Ω	2700 Ω	3200 Ω	910 Ω	2500 Ω
Termination	25 pF	25 pF	25 pF	25 pF	25 pF	25 pF	25 pF
Shape Factor	170 dB/2.4	170 dB/2.3	170 dB/2.2	70 dB/1.9	70 dB/2.0	140 dB/3.0	20 dB/3.0
	190 dB/2.8	190 dB/2.9	190 dB/2.3	190 dB/2.5	190 dB/2.5	—	130 dB/3.7
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the use of two small transistors and a few minor parts. The transmitter is wired ready for the fitting of a modulator which is described in the second part.

The modulator uses a 6AU6 as the microphone amplifier and a 6BQ5 as the modulator valve. The circuitry is arranged so that the speech bandwidth is only from about 300 to 3000 Hz, with modulation over 100% in the upward direction and less than 100% in the downward direction — this stops splatter without dropping the effectiveness of the transmitter. Press to talk has been included for convenience and works in with the CW sem-break-in system. All the switching for the AM/CW changeover is included in the first part of the transmitter description. No power supply is shown in these articles, although a suitable one will be described at a later date.

Power supplies generally are not a very complex item of equipment.

#### REMARKS

Very recently David Down received good news — he has passed his full amateur ticket — congratulations David. Incidentally, David is a relative newcomer. He also runs a Radio Club with a friend in one of the southern suburbs of Adelaide. David's address, for those who wish to write to him direct on matters pertaining to this column, particularly on those sections he has written, is as follows: 17 Brodie Crescent, Christies Beach, 5165. There will be more of David's articles in the near future.

Thank you to those amateurs, amateurs to be and short wave listeners who took the time to write to me about the queries I had in the June issue of AR. Wherever possible the suggestions will be acted upon.

Are you looking around for a Novice transmitter or a Novice transceiver? Some of the old ex-service transmitters and transceivers may fit the bill — although you may need a bit of help to get them going properly. The following sets fit the bill for 3.5 MHz with little modification. No. 122, 3BZ, No. 109, Type A Mk3, Type 3 Mk2, AT82 and No. 62. I am not saying that all of these sets are marvellous, but they require little modification if any. The following sets require modification for crystal control as well and are, No. 11, No. 19, No. 22, No. 22 English, FS6. These sets would have to be cheap to make it worthwhile. Other sources of transmitters and transceivers will become apparent as time goes by and I will endeavour to point you in the right direction. See you next month with the first part of the Novice transmitter.

## Contests

with Jim Payne, VK3AZT  
Federal Contest Manager,  
Box 67, East Melbourne, Vic., 3002

### CONTEST CALENDAR

#### AUGUST

- 9-10 European CW
- 15-17 Remembrance Day
- 23-24 A1 Asian CW
- 30-31 Seaneat Worldwide Phone & CW

#### SEPTEMBER

- 1-14 European DX phone
- 20-21 Sound relay CW
- 27-28 Sound relay Phone

#### OCTOBER

- 4-6 VK/ZL Oceanic Phone
- 1-12 VK/ZL Oceanic CW
- 25-28 CW WW DX Phone

#### NOVEMBER

- 8-9 European RTTY CW
- 25-30 CW WW DX CW

### REMEMBRANCE DAY CONTEST

As this was written before the rules for this year's RD Contest have been published, I can only hope that by the time you, the contestants, read this at least 1-200 of you will have decided to spend some time on the air during the weekend of August 16/17 and subsequently send in a log. Collectively you will send a lot of paper to Box 7, East Melbourne so please take special care to prepare a log sheet as requested and attach it to your log. Last year quite a number of log sheets were omitted and this makes a great deal more work for the FCM. For example, if the section for which you have entered a net shown, i.e. phone, CW or open each RST report may have to be pursued to find out the section for which the log is entered, if it is to be of great help to entrants who operate exclusively on 52 MHz and above will indicate this on the front sheet. Finally, good luck to you all and may the sun have the most during this weekend.

### ALL ASIAN DX CW

1000 GMT Aug 23rd to 1600 GMT Aug 24th  
A1 bands 1.6 to 28 MHz. The contest call is CO

AA for non-Asian stations, CO Test for Asian stations. OM stations exchange RST and operator's epx. YL stations give RST and QO. Scoring is one point for each Asian station (except KA). Multiplier is number of different Asian prefixes worked on each band, using the WPX rules. Contacts between non-Asian stations do not score. Final score is sum of the contest points on each band multiplied by sum of multipliers on each band. The highest score in each continent will get a medal and certificate from the Minister of Posts and Telecommunications of Japan. Logs must reach JARR, Box 377, Tokyo Central, Japan, before 30th Nov. 1975. Results should be known about April 1976.

The following are countries in Asia:

AAX (Sultante of Oman)	UI8/UKA-G I.L.O
AS1 (Sultan)	T-Z
AS8/MP4D (United Arab Emirates)	UI8/UK&R
ATX/MP4Q (Qatar)	UI8/UK&M
AS8/MP4B (Bahrain)	V88
AC3 (Sikkim)	V88M/Q88
AP (West Pakistan)	VU
CV (Nicaragua)	VU (Andaman & Nicobar Is.)
BY (Yugoslavia)	VU (Laccadive Is.)
EP (Maldives)	WV
HL/HM	XW5
HS	XZ
HZ/72	YA
JAR/JAF/JOR	YI
JH/JJR	YK
JD1 (Ogasawara Is.)	ZC4/S64
JT	487
JY	49
KA	4X/4
SA1 (Bangladesh)	71 (South Yemen)
T2	70/V88K (Kamran Is.)
UA/UK/V/U/LWS-0	824
UE/UK6C, D	9K2
UF/UK6F, O, Q, V	9M2 (West Malaysia)
UG/UK6G	9N1
UH/UK6H	9V1
	159 (Seychelles Is.)

A copy of the results will be sent to you if you enclose a self-addressed envelope and a reply coupon with your log. Reply coupons can be purchased at Post Offices.

### MARTS SEANEAT WORLDWIDE CONTEST 1975

001 GMT 30th August to 2359 31st August  
Information about this contest arrived from "Essex 262FX and the cover bore an instruction: 'See p. B4 opening — Open B4 reading — Read B4 answering — Answer B4 long' One of the aims of the contest is to publicise the 5th SEANEAT CONVENTION to be held in Kuala Lumpur from Nov. 7-9 1975. The contest is being held on Aug 30/31 which is Malaysia's Independence Day. Phone of CW (no cross mode) may be used on all bands 160 thru 10 metres. Contest call is 'CO Seaneat' for phone and 'CO Sea' for CW using RST and QSO numbering.

Contestants in SEANEAT area (includes VK) score 1 point for contacts with other SEANEAT stations (except other VKs) and 2 points for contacts outside SEANEAT area. VK contestants use a multiplier of 3 for each country outside SEANEAT and 2 for each country within SEANEAT.

A separate log is required for each band and a summary sheet showing Band Number of QSOs. Points Multiplier and score. A description of the station and antenna is required together with the usual certificate.

The highest VK scorer will receive a commemorative certificate of the 5th Seaneat Convention. Worked All Malaysian Area Award can be earned by sending in a separate log sheet covering the required number of contacts: 5 ten 5M2, 10 ten 5M1, one 5M6, one 5M8 and one 5B5 Logs etc to reach MARTS SEANEAT CONTEST CTEE 251-CJ Jalan Pexelling 6011 Gopur, Penang Malaysia, not later than 30th September. Results will be announced Nov 6th.

Only one contest per band with the same station is permitted.

### SEANEAT AREA COUNTRIES

4A, AS1 AS, AT, AR, AC3, AP, BV, CR9, O, EP, HL/HM, HS, JA etc JD1, JY, KCS, K98 K8 KX8 P29 S21, VK VQ9, VS6, VS8K VS8M S26, VU2, VU (Andaman & Nicobar and Laccadive Is.) XL, XV5, XW5, YB, YJ9 ZL, ZD, ZS, Z8 457, 4W1, 524 5M2, 5M5 5M8 9K2 9N1 and 9V1

### EUROPEAN DX PHONE

0000 GMT Sept 13 to 2359 Sept 14th  
See details as given for European CW in Amateur Radio July 1975.

## Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

### The Editor,

Dear Sir,  
This is International Women's Year, but where are all the VK YLs? It is exciting to be told, "You are my first VK YL", but this turns to embarrassment when asked, "How many Australian YLs are there? We never hear them".

Well, where are they? We know they exist, no ladies show your faces?

Compare Australia to USA, New Zealand, or Germany. These countries have very active YL groups. They have YL clubs, special certificates for working YLs eg DVCCYL, WACYL, and WARO awards, OM/YL contests, and special notes in amateur radio magazines.

What do we have to boast of — nothing! We don't even know how many YLs there are in Australia.

So ladies let us get together and do something to increase YL activity and interest in amateur radio. Let us at least know you exist, whether you have a call or not.

Here is a list of the YLs we know of (mainly with

reference to the call book) Can you help us to upgrade it?

VK1-VL  
VK2-HD, M, MR, BU, A1A — MJA — APR ACK  
Hebe, B5B Susan, AX5 — Mona BVL  
Wendy

VK3-HQ, KS — Mavis KT — Brenda VB  
Clance YL — Austre AD7, AGO, AY.  
Norma BAK — VJ, ZYK — Dawn, ZY.

Rhonda, BJB — Joen

VK4-EO — Evelyn VV — Linda

VK5-LM — Lorna VL, YV — Merna

VK6-MH

VK7-VL, LV Anne ZA

Some further suggestions — how about our own VK YL award and a net regular session

# BRIGHT STAR CRYSTALS

- PROMPT DELIVERY GUARANTEED
- ALL TYPES OF MOUNTINGS

Such as HC6/U (style D) HC18/U (style J) HC25/U (style K)  
etc. Frequency range up to 140MHz on 5th overtone.



- ACCURACY
- STABILITY
- ACTIVITY
- OUTPUT

## BRIGHT STAR CRYSTALS PTY. LTD.

35 EILEEN ROAD, CLAYTON VIC. 3168 Phone 546-5076 (Area Code 03)

INTERSTATE CLIENTS Contact your Local Agent

Our increased production now enables us to offer Special Discounts from 10% Let us quote you for all your Crystal requirements Our easy-to-read Price List is now available

Sydney PARIS RADIO ELECTRONICS 7a Burton Street, Darlinghurst NSW 2010, Phone 31-3273

Perth W. J. MONCR EFF PTY LTD., 176 Wittenoon Street, East Perth., 6000, Phone 25-5722

Brisbane FRED HOE & SONS PTY LTD., 246 Evans Road, Salisbury North, 4107, Phone 47-4311

Adelaide ROGERS ELECTRONICS P.O. Box 3, Modbury North, S.A. 5092 Phone 264-3295

## "WILLIS" AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding use "WILLIS" AIR-WOUND INDUCTANCES

No.	Dia. inch	Turns per inch	Length inch	B & W Equiv.	Price
1-08	1/8	8	3	No 3002	88c
1-16	1/16	16	3	No 3003	88c
2-08	1/8	8	3	No 3006	\$1.06
2-16	1/16	16	3	No 3007	\$1.06
3-08	3/16	8	3	No 3010	\$1.28
3-16	3/16	16	3	No 3011	\$1.28
4-08	1/4	8	3	No 3014	\$1.42
4-16	1/4	16	3	No 3015	\$1.42
5-08	1/2	8	4	No 3018	\$1.58
5-16	1/2	16	4	No 3019	\$1.58
6-10	2	10	4	No 3907	\$2.29

Special Antenna All Band Tuner Inductance  
Equivalent to B & W No 3907 7 inch  
7" length, 2" dia., 10 T.P.I. Price \$3.95  
Reference A.R.R.L. Handbook, 1961

Willis Pi-Coupler Unit — \$18.00  
Stock size of Transistors on Cables, Inductors and Hard Drawn Copper Antenna Wire Write for range of Transmission Cables

## WILLIAM WILLIS & CO

PTY. LTD.  
Manufacturers and Importers  
77 CANTERBURY RD., CANTERBURY VIC. 3126 Phone 836-0707

# NOVICE 27 MHz ANTENNAS (BY HY-GAIN)

## 5 ELEMENT BEAM (inexpensive)

- 17 Foot Boom
- 10 dB Forward Gain
- Mounts Horizontal or Vertical
- 1000 Watts Capability



This beam features our exclusive Beta Match system which matches it to a 52 ohm feedline and puts the driven element at DC ground for noise-free operation and lightning protection. Constructed of high tensile strength aluminium tubing with a heavy machine formed boom-to-mast clamp. All hardware is iride treated for maximum resistance from corrosion.

WEIGHT 14.1 lbs.

\$58.00

## BIG GUN II (an authentic quad, 4-element)

- Selectable Polarisation Vertical or Horizontal
- 14.5 dB Gain
- 20 Foot Boom
- All Aluminium Construction



Hy-Gain's Big Gun II has the longest boom available of any selectable polarity antenna. The Big Gun II will give you the highest beam available from a CB Quad antenna — so tight that you must aim directly at the signal on receive or you don't hear. Optimum tuning by our twin driven double loop elements provides greater capture area. All aluminium construction including the element wires, gives you durability.

WEIGHT 39 lbs.

\$180.00

MANY OTHER TYPES IN STOCK — e.g. 2-element Quads, Long John 5-element, 3-element low cost beam, vertical 1/2 W<sub>d</sub>.

1/4 W<sub>d</sub> ground planes, mobile whips. Write for list and prices.

All prices include Sales Tax. Freight and insurance extra. Prices and specifications subject to change.



## ELECTRONIC SERVICES

60 Shannon St. Box Hill North, Vic., 3129.

Ph. 89-2213

W.D.: MITCHELL RADIO CO., 58 Adams Road, Box Hill North, 3129.  
S.S.: STEPHEN KURL, P.O. Box 58, Meech, 3000.

S.A.: FARMERS RADIO PTY. LTD. 267 Angus Street Adelaide 5000.  
W.A.: H.N. P.P. DE 26 Lockhart Street Perth 6150.

Ph. 87 6830  
Ph. 897 1150  
A.N. 571 5445  
Ph. 23 1056  
Ph. 60 4379

To the OMs, don't think this does not concern you. Give the ladies a go, encourage them to be interested in the hobby, let them know there are other ladies to talk to, invite them into the shack to have a little recharge or at least a little chat.

In conclusion to all, please help us let the world know we have women interested in radio. If you have some suggestions of how this can be done please let us know. All ideas are welcome.

73a, 78a, 33a (where appropriate)  
Norma VK3MYL, Rhonda VK3ZYL,  
SWLs Irene and Jenny.

The Editor,  
Dear Sir,  
Last week thirteen amateurs formed a local net in Sydney on the 10 metre band. 28.500 MHz was established as an all modes CW, AM, USB calling channel for mobile, handheld and base station operators.

28.100 MHz was allocated as a secondary net so as to allow 11 metre novice operators who obtained their full licence to use both the 11 and 10 metre bands with little modification and no test of the existing 11 metre band coverage.

These nets were situated so that not only local but also interstate contacts could be promoted. In Sydney there are now two HF calling channels in use. The idea is, when you are in the shack, tune your HF set to monitor one of these channels. On 11 metres there is 27.125 MHz for 10 modes. On 10 metres 28.5 MHz is primary and for those wishing to add 10 metres onto their 11 metre transceiver, 28.1 MHz is encouraged. Shortly, it is hoped that details of a third all-mode Sydney calling channel for 1.825 MHz in the 160 metre band will be available.

Amateurs in Sydney would like to encourage amateur interstate to adopt similar frequencies through their local WIA broadcasts and "on air" publicity so as to encourage interstate contacts as well as promote the local coverage characteristics of these bands.

For the latest DX news, experimentation and local ragchew see you on the 160, 11 and 10 metre nets.

VK3BVS  
The Editor,  
Amateur Radio  
Dear Sir,

Further to my letter regarding the marking of A.O.C.P. Examinations by the P.M.G.

I rang the Radio Branch in Melbourne the other day to inquire as to the progress of same and was told (by an obviously harassed female) that there would not be much chance of obtaining results until well after August.

This is a deplorable state of affairs. When I asked as to the reason for such a delay I was told that all Radio Inspectors were occupied on the new Novice Licensing.

Whilst I am all in favour of this licence I do consider that a full licence takes precedence. My interest in radio is slightly dampened.

Impatient prospective amateur,  
T. J. Connell  
P.O. Box 718, Madang, P.N.G.  
3 June, 1975

The above charges apply to everyone. In addition, however, non-ARRL member applicants in Canada, the US and possessions (including Puerto Rico) must include an additional service charge of \$5 for each new application and a \$2 additional service charge for each endorsement application.

As of 1st June 1975 the application charge for the SBDXCC will be \$20.

**WORKED ALL MALAYSIAN AIRWAYS - W.A.M.A.**  
This award has been available from the Malaysian Amateur Radio Transmitters Society for some time, but in case of any of you haven't heard of it the opportunity is taken to announce the requirement again.

A W.A.M.A. Certificate will be issued to any ham that can prove he has established a two-way contact with the following call prefixes:

- 10 9M2 contacts with different calligns
- 10 9V1 contacts with different calligns
- 1 VBS contact
- 1 846 contact
- 1 9M3 contact

Any special attachment like "All contacts by SSB", "All contacts on 60m SSB" etc. can be indicated on the certificate.

A list showing all contacts made, indicating callign, date, time, mode and band, should be sent with the application. QSLs do not have to be included if the list has been certified by the local amateur society or two other amateurs.

The application should be followed by 5 IRCs to cover return postage.

Applications should be addressed to:

MARTIS  
PO BOX 777  
KUALA LUMPUR, MALAYSIA

## VHF UHF

### an expanding world

with Eric Jamieson VK5LP

Forreston, S.A. 5233  
Times: GMT

AMATEUR BAND DEACONS	
VK0	VK0MA, Mawson 83.160
VK1	VK0GR, Casey 83.200
VK2	VK1RTA, Canberra 144.475
VK3	VK2WV, Sydney 82.480
VK4	VK2WV, Sydney 144.910
VK5	VK3RTA, Yarmouth 144.700
VK6	VK4RT, Townsville 82.600
VK7	VK4W1/1, Mt. Mowbrail 144.400
VK8	VK5VF, Mt. Lofy 53.000
VK9	VK5VF, Mr. Lofy 144.800
VK10	VK6RTU, Perth 82.300
VK11	VK6RTU, Kalgoorlie 82.350
VK12	VK6RTU, Albany 82.950
VK13	VK6RTU, Albany 144.500
VK14	VK6RTU, Perth 145.000
VK15	VK7RTX, Devonport 144.900
VK16	P29GA, Lae, Nugini 82.150
VK17	3D 30AA, Suva, Fiji 82.500

These notes are being prepared whilst on holidays touring around Queensland, particularly around Cairns and Townsville, sampling some of the hospitality of the northern VK4 amateurs. Prior to leaving, Ed VK4ZEEZ advised of the operation of the 2 metre repeater in Townsville, call sign VK4RAT on repeater Channel 1. Service area extends as far as Alligator Creek. Ed also mentions Mackay area calling frequency will be either Channel 50 or Channel 50.8. Both channels will be on Channel 40. So bear these channels in mind as you come up the Coast to Townsville. The inland roads are rather rough at present, and somewhat lonely, and of course, no amateurs!

**REPEATER NEWS**  
Now that repeaters and FM in general represent such a large portion of the operation on VHF or so many amateurs, it seems reasonable to give more space to their operations - particularly in the absence of much news from the tuneable end of the bands.

George VK3ASV mentions in a letter that the Victorian State Repeater Committee are fully organised, with Chairman Peter VK3BX, Vice-President Peter VK3ZPP, Secretary Ken VK3ZNV, Publicity Officer George VK3ASV. The latest 2 metre

FM repeater listings have been sent to AR by GE, so will not be separately listed here. Here are a few items which should be of general interest, also to those travelling interstate.

**ALBURY-WODJONG** - Excellent results using Ch. 4 in Triumpher operation from Mt. Big Ben have been made. **MILDURA** - Channel 4 operation now satisfactory with installation of co-axial filter. **MT. WILLIAM** - Western Zone meeting decided to change from Ch. 1 to Ch. 7 to eliminate co-channel interference with Melbourne. **SWAN HILL** - Triumpher operation from Mt. Big Ben has been approved. Probably Ch. 1, **MT. MACEDON** - Proposal to operate on Ch. 6. **LYTTON VALLEY** - VK3RLV on Ch. 2 has been resited to GLVLY Tower on Mt. Tassie, general upgrading of repeater and power increase to 20 watts. Identifier using FSK 4 MCW and 1000 Hz to be filed at same time. **EAST GIPPSLAND** - VK3RE - Ch. 3 equipment ready, solar cell power supply being tested. Proposed site Mt. Sugarloaf, 900 m a.s.l. Should provide quite good area coverage of Lakes area and Princes Highway. **MT. DANENONG** - VK3RML on Ch. 1 now operates with a timer, time out "beep", and FSK identifier. Transmitter power reduced to 60W to help hearing problems, receiver sensitivity improved.

**OTHER AREAS** - If other States repeater publicity officers would like to forward information in a style similar to that shown above, outlining brief points which should be of general interest, please let the editor have the notes by 25th of the month to allow for editing and inclusion in material for AR.

As mentioned previously these notes are being written on holidays. Information is somewhat scarce, so will ask you to bear with me until next time.

Before closing two things come to mind. Firstly, congratulations to the South East Radio Group in Mt. Gambier for another excellent Convention in June. The other is the Moonbounce report from Illawarra Branch of WIA (VK2AMW). Construction of the new one kilowatt power amplifier for the transmitter has been completed and installed. Letter from PBT requests special EME tests with VK2AMW. If something eventuates from this, a new area should be available to Australia.

That's all for now. Closing with the thought for the month: "The wisdom of the spoken word may well exceed the value of the person uttering them".

The Voice in the Hills.

## 20 Years Ago

with Ron Fisher VK3OM

**AUGUST 1955**  
August 1955 and the era of the 8146 was with us. Acutely Phillips had been running front cover advertisements for this new tube for the three issues prior to August. 'AR' introduced the 8146 with a reprint from QST, "120 Watts of Audio Without Driving Power" by George Gardner, W1DF. Two pages of 8146 data for all classes of operation (with notes on tube disposal) were available at a pound each it was going to take a few years for the 8146 to take over.

"An Introduction to Two Meters" Robert Black VK2QZ took a lighthearted look at the problems of firstly finding the two metre band and then getting equipment going. Two cartoons drawn by an unnamed artist, illustrated the article.

Interesting correspondence was going on in the pages of Amateur Radio regarding the proposal by the VK6 Division to restrict limited licence holders to associate membership. Both Gordon Waydon VK3ZNV and Harold Ruckin VK3ZAF (now VK3ZV) took up an opposing stand.

Back on the technical side, John Miller VK2ANF described the construction, calibration and operation of a vacuum tube voltmeter.

Wooden towers were popular twenty years ago. Ready made TV towers did not appear on the scene until Harold Ruckin VK3ZAF showed us his particular method for constructing a 42 foot lattice tower.

VK3AHN's DX notes reported that lambeau operator Bob Ford ex-AC4RF had been released from internment. Tribes and was now anticipating activity from VBS. Conditions on the bands were on the up and up with even a few reports of DX contacts on ten metres.

## Awards Column

with BRIAN AUSTIN VK5CA  
P.O. Box 7A, Collingwood 5152

**FROM QST, APRIL 1975:**  
Announcements have been made of the availability of a new DXCC award and a new fee schedule for all DXCC awards.

The new DXCC award is for CW only. Applications for it will be accepted starting 1st June 1975. Credits for the CW DXCC award are for contacts made 1st January 1975 and after.

A new fee schedule for all DXCC awards and endorsements will go into effect starting 1st June 1975. All new applications for the DXCC award must contain \$10 US (or 56 IRCs). This \$10 will be used to return the applicant's confirmations by registered first class mail, the certificate, the DXCC lapel pin and handling. While applications may be made for any or all of the DXCC awards at the same time, the \$10 application charge applies to each of the applications.

Each subsequent submission for endorsement (or completion of a new application) must contain a handling fee of \$2 plus postage for the return of the applicant's confirmations.

# Hamads

- Eight lines free to all WIA members.
- 35 per 3 cm for other amateurs and SWLs.
- Copy should be in block letters or typescript, signed and forwarded to The Editor, PO Box 150, Torral, Vic. 3142.
- Excludes commercial advertising.
- Closing date for Hamads is the 3rd day of the month preceding publication.
- QTH means the advertiser's name and address are correct in the current Australian Callbook.

## FOR SALE

Conv. MTR 18 on 6 m. working. \$26. Homebrew 2 m AM AT 25W, needs xtl/VFO, 355. Part completed 3 band transceiver, beaut. VFO, dual, switching includes PSU and some parts. \$30. 20-58 MHz v. accurate sig. gen., noise gen., xtl calib. \$25. Many odd transistors, chokes, chassis, etc. Ask! Simon VK3ZUI, QTHR. Ph. (03) 623442 AM.

Vindin MTR13 with channel 1, and new dynamic mike, \$55. Type 3 Marx 2 transceiver 160 to 20 metres, \$50. VK3AHG, QTHR. Ph. (03) 288 2024 AM.

Transceiver and 24V power supply, Plessey model C13, 1.0 to 120 MHz in 1 MHz steps. Tx — AM/CW/Rx AM/CW/SB, \$50.00. A. G. Lyall VK3ZTY 150 Seaford Rd., Seaford, 3198. Ph. (03) 785 5961.

400W Linear with P/B, uses 4C x 350A on 6m. 2.5/3.5 kv at 1 amp. 1 HP blower \$300 CFM. Fully metered 3 in. Panel Meters. Reg. Screen and Bias Supplies. Extra Socket mounted for extra band. Spare 4C x 350A (new) 4C x 250B, 2 used. Will swap for any 58B TX/Rx or sell \$300 QNO. Could be modified to any HF band with any tube up to 4 kv rating. VK3ZAZ, R. S. D. Buninyong, Vic. 3357. Ph. 41 3777.

Thunderbird DXB Beam, tri-band, 6 el., excellent condition, little used, complete, \$80, plus 50 ft. tower, crank-up alloy, very solid construction. Own transport to be arranged. \$100. Bob items, come for sale for new QTH. VK2BGL, 4 Buena Vista Rd., North Springwood, Ph. (047) 54 1096.

Swan 500C Transceiver with VOX, mike, heavy duty power supply, hand book, excellent condition, \$375. VK2AYE, QTHR. Ph. (02) 528 0825.

TCA 1677 Low Band Transceiver complete with mike, plugs and circuit, not converted, good condition. 440. AWA T5-30C, 50 Watt base station and receiver — high band less some valves, otherwise complete, not converted, \$400. VK3ALT, QTHR. Ph. (03) 277 2337.

Complete Service Manual for communication R5223 model. T.C.A. Also includes two large internal and external circuit diagrams, for \$15. P.O. Box 141, St. Kilda West, 3182. Ph. (03) 689 2400 A.H.

Swan 580, mint cond., \$250. C/W manual and spare line VK2BTL, QTHR. Ph. (03) 20223, X 209. Celine's 7881 Rx, fitted with 300 H CW filter, mint condition, \$425. BC221 AK freq. meter, incl. 240V reg. supply, 125 kHz to 20 MHz, excellent cond., \$100. QNO. VK2AS, QTHR. Ph. (02) 467 1784.

FT200 and Duke 5 85B Transceiver with PSU and mike, \$300 ea. or \$550 both. Will swap. Adam Kay VK3AXN. Ph. (02) 451 9870.

Halliwaters HT-44 80 to 10m 58B Tx, complete with PSU (110V AC), manual, spare final tubes with 100W PEP, perfect cond., \$200. Yaseu FT101B Transceiver, perfect cond., only 6 months old, \$560. Set of Asahi whips, with bumper mount, 80-10 metres, \$50. Lionel VK3NM, QTHR. Ph. (03) 88 3710 AH, (03) 329 7868 X 45/46 Bus.

Scope Soltering iron with spare tips, \$15 (with transformer 1973 XA Falcon Car Radio, perfect cond., \$50. TV Camera with (ripod stand, 2 lens, very good cond., \$200. 2 HT Holden Wheels (new) each \$20. Lionel VK3NM, QTHR. Ph. 88 3710 AH, (03) 329 7868 X 45/46 Bus.

Realistic DX-158A, inbuilt HV cat. G.C., \$150. Variable Condensers, 50c per gang. Jeff L-30409. Ph. (04) 546 8940.

FTDX650, late model, immaculate cond., with silent fan, noise blanker, CW filter, spare final tubes, etc. \$435. QNO. VF401 external VFO, as new in carton, \$90. QNO. Magnam 6 RF Speech Processor, suit FTDX400, 401, 401B, 560, 610, FT101 & 101B, mint condition. \$100. QNO. VK3ARZ, 12 Explorers Court, Vermont South, (03) 232 9462.

# PROJECT AUSTRALS

WITH DAVID HULL VK3ZDH

## OSCAR BEACONS

The Oscar 6 and 7 beacons provide vital data on the spacecrafts health and are a necessary part of the housekeeping of the satellites. These beacons are placed on the edges of the transponder channels, 29.45 MHz in the case of Oscar 6, 29.50 and 145.58 MHz for Oscar 7. Strong signals picked up by the satellite on the corresponding edges of the uplink passband will tend to interfere with these beacons by being re-transmitted on top of, or alongside, the beacons, causing reduced readability and consequent problems to command stations. The VK2 repeater on the old Chen. 4 frequency has caused problems with the AOE beacon since its launch and from time to time several CW stations have tended to operate within QRM range of the beacons. This can be a particular problem with the RTTY telemetry of AOT. It should be pointed out that the spacecrafts have reduced receiver sensitivities on their bandpass edges and this the stations using the edges are reducing their on-ground received strength by straying too far from the passband centre. VHF FM users' co-operation would be appreciated also in avoiding inadvertent QRM of Oscar 7's beacon on 145.900 MHz.

## PREDICTIONS FOR SEPTEMBER 1975

### OSCAR 6

Date	Orbit No.	Time	Long	Lat	W	Orbit No.	Time	Long	Lat	W
1	13163	01.13	70	1	3625	B	00.50	64		
2	13165	00.13	54	2	3638	A	01.00	77		
3	13178	01.08	58	3	3650	B	00.50	62		
4	13190	00.08	53	4	3663	A	01.44	78		
5	13203	01.03	55	5	3675	B	00.44	61		
6	13215	00.03	51	6	3688	A	01.38	74		
7	13228	00.58	65	7	3700	B	00.37	59		
8	13241	01.53	80	8	3715	A	01.32	73		
9	13253	00.52	64	9	3728	B	00.31	58		
10	13266	01.48	78	10	3739	A	01.25	71		
11	13278	00.46	63	11	3750	B	00.25	56		
12	13291	01.43	78	12	3763	A	01.19	70		
13	13303	00.43	59	13	3776	B	00.18	54		
14	13316	01.38	75	14	3789	A	01.13	68		
15	13328	00.37	50	15	3800	B	00.12	53		
16	13341	01.32	74	16	3813	A	01.08	65		
17	13353	00.32	59	17	3825	B	00.08	51		
18	13366	01.27	73	18	3838	A	01.00	60		
19	13378	00.27	58	19	3851	B	00.54	78		
20	13391	01.22	71	20	3863	A	00.53	63		
21	13403	00.22	56	21	3876	B	01.48	77		
22	13416	01.17	70	22	3888	A	00.47	62		
23	13428	00.17	55	23	3901	B	01.41	78		
24	13441	01.12	69	24	3913	A	00.41	60		
25	13453	00.12	54	25	3926	B	01.35	74		
26	13466	01.07	67	26	3938	A	00.34	58		
27	13478	00.07	52	27	3951	B	01.29	72		
28	13491	01.02	66	28	3963	A	00.28	57		
29	13503	00.05	51	29	3976	B	01.22	70		
30	13516	00.05	65	30	3988	A	00.22	55		

# Magazine Index

With Syd Clark VK3JAC

## CG March 1975

A Breakthrough in Simplifying Ionospheric Propagation Forecasts; Antennas; The Wideband 20 Metre Array; White House Rips off Amateur Radio; Alternate Sources of Power; Mixers and Local Oscillators for VHF Converters; VFO Design for QRP Transmitters; Docket 20282 and the Novice Licence.

## HAM RADIO April & May 1975

Integrated Circuit Electronic Keyer; Microstrip Pre-amplifiers for 1296; Digital Touch-Tone Encoder; Direct Reading Capacitance Meter; Keyboard Morse Code Generator; Variable Crystal Oscillator; Wideband RF Amplifier; VHF Single Frequency Conversion.

Large Vertical Antennas; Log-Periodic Antenna Design; Phased Vertical Array; Open-Grid Parabolic Reflectors; Shunt-Fed Vertical Antennas; 1296 MHz Yagi Array; Measuring Complex Impedance with an SWR Bridge; Electrically Steered Phased

# Silent Keys

NORMAN ERIC MORTLOCK VK3PO

Many VK and Overseas Amateurs will be addressed at the passing of 'NORM' MORTLOCK VK3PO late of Randwick and Engadine, N.S.W., on 10th May, 1975 after a long illness at the age of 65 years.

Norm was a well known CW operator on most HF bands as well as a keen VHF 2 metre operator, where he helped many to the full licence with his CW practice sessions during the late 1950s despite his failing health and demanding occupation.

Norm had recently retired from the Department of Customs and Excise and prior to this appointment had been a Technician with the Post Master General's Department.

Norm was a gentleman who was always ready with a helping hand or word; he will be sadly missed by his friends.

To his family we extend our deepest sympathy.

VK2ZDH

Mr. M. H. MEYERS VK3VN  
Mr. R. S. MITCHELL VK3AID  
Mr. G. WALKER VK4BX  
Mr. J. V. HUTCHISON VK3JH

Array; 80 Metre Bow-Tie Antenna; Low-Frequency Loop Antenna; Tilt over Tower.

## QST April & May 1975

Simple RF Bridges; A Ten-Metre Swiss Guard — Missouri Style; Learning to Work with Semiconductor Transmitter Design; Varicap Tune Your VFO; The Ultraminiaturizer; A Low Cost CW Identifier; The Lessee's Radiator; A 100 Metre Receiving Loop; The ETO Alpha 74 Bandpass Linear Amplifier; HTACPS Put your FM Handyside to Work at Home.

A Parallel 4X250B Amplifier for 144 MHz; A Constant-Super-Tuning System for Qued Antennas; Learning to Work with Semiconductor Parts; An Analog Computer Type Active Filter; Slow-Sweep to Fast-Sweep TV Converter Pt. 2; The City Clicker.

## RADIO COMMUNICATION April 1975

A Caption Generator for SSTV; Reduction of an In-Band Spurious Emission in the Linear 2; Testing Fall-out Integrated Circuits; Radio Communications at Frequencies below 10 kHz; Taking the Radio Amateurs' Examination; Building Blocks for the Novice — Diodes.

## MANAGER REQUIRED FOR AMATEUR GEAR



We need a competent manager for our expanding Amateur department. He will report directly to Dick Smith and his responsibilities will include purchasing, importing and selling Amateur gear. He should preferably be an active, licenced Amateur. He will also represent the company at Field Days and other events.

Age is less important than ability and enthusiasm. Phone Dick himself to discuss prospects or write giving experience and salary etc. To: DICK SMITH ELECTRONICS Pty Ltd 160-162 Pacific Hwy, Gore Hill 2065 Tel: 439 5311.



# RADIO ELECTRONIC BARGAIN CENTRE

390 BRIDGE ROAD, RICHMOND 3121 PHONE: 42 5174

Plenty of BARGAINS for the Radio Amateur or the Hobbyist. Owing to the recent tariff cuts on electrical goods, we have obtained large quantities of components, transformers, panel meters etc. which can be bought at very reasonable prices while they last.

**Stereo Tone Arms with ceramic cartridge fitted** ..... **\$5.90**  
**Mono Tone Arms with crystal cartridge fitted** ..... **\$2.00**  
**2N3055 Transistors with insulating kit** ..... **\$1.00**  
**Stolle 300 ohm Feeder with foam dielectric 15c yard**  
**58 ohm Coax Cable 100 yd. Rolls, 1/4" diam.** ..... **\$12 Roll**  
**52 ohm Coax Cable 1/4" diam. 45c yard, 50c metre**

**Dow Key Coaxial Relays 48 Volt DC operation** ..... **\$15**  
**Split Stator Capacitors with screwdriver slot drive, 9 pF-17 pF-25 pF. Brand new Eddystone type** ..... **\$4.50 ea.**  
**Ex Army Headphones approx. 20 ohms impedance. New, in sealed boxes** ..... **\$2.00**  
**3" Tape Spools** ..... **15c ea., \$1.00 for 10**  
**2" Square Face 0-10 mA Meters, calibrated 0-60** ..... **\$3.00**

**Edgewise 0-1 mA Meters 2 1/2" x 1 1/2" face, 3" deep, calibrated 0-5** ..... **\$3.00**  
**Panel Meters 5 1/2" x 4 1/4" with 0-1 mA movement, various scales on meters (gas analyser, etc.)** ..... **\$5.00**  
**30 kHz M.E.W. Crystal Filters 10.7 MHz** ..... **\$5 each**  
**3 ft. Twin Cable Audio Leads with 3.5 mm plug fitted** ..... **10 for \$2.00**

**Plessey Speaker Specials**  
**5" x 3" 3.5 ohm speakers with ferrite magnet** ..... **\$3.00**  
**5" round 8 ohm, 4 1/2 watts** ..... **\$3.50**  
**5" x 4" 16 ohm, 3 1/2 watts** ..... **\$3.00**  
**5" round 16 ohm, 3 1/2 watts** ..... **\$3.00**  
**X20 Tweeters, freq. range 3 kz-20 kHz, 20 watts RMS** ..... **\$5.50**

**Car Speakers**  
**7" x 5" 4 or 8 ohms, 5W. compl. with grille** ..... **\$4.90**  
**6" x 6" 4 or 8 ohms, 3W. compl. with grille** ..... **\$5.90**

**Car Extension Speaker Controls. Use both speakers together or separately** ..... **\$1.50**

**Wire Wound Potentiometers in the following values: 5 ohm 2 watt, 10 ohm 2 watt, 500 ohm 2 watt, 3000 ohm 2 watt. All** ..... **\$1.30 ea**

**Plastic Turntable Covers (blue tint) 15 x 18 x 3 1/2" deep** ..... **\$5.00**

**Jackson Slow Motion Drives 6:1 ratio** ..... **\$2.30**  
**New 240V AC Turntable Motors, 3 speed operation** ..... **\$2.00**

**Car Radio Suppressor Kits (2 condensers, 1 coil lead suppressor)** ..... **\$1 ea**

**Car Radio Suppressor Condenser** ..... **50c ea**

**Cigarette Lighter Accessory Plugs** ..... **45c ea, 10 for \$4**

**"Maspro" TV Baluns 300-75 ohm for colour TV** ..... **\$2.50 ea**

**Standard Black and Clear TV Ribbon 15c yd**

## SCOOP PURCHASE

### TRANSISTOR RADIO CIRCUIT BOARDS IDEAL FOR HOME CONSTRUCTORS

Due to Tariff cuts on transistor radios, we can offer the items below at this price. Most are in working order but no guarantee at these prices.

#### THOUSANDS AVAILABLE

### AM & TRANSISTOR CIRCUIT BOARDS

All new parts. IFs, capacitors, resistors, etc.

**\$1.50 each or 3 for \$3.50**

### AM/FM CIRCUIT BOARDS

10 transistors, all new. Ideal for use as FM tuner, 88-108 MHz.

**\$2.75 or 3 for \$7.00**

### ALSO LARGE QUANTITY OF RADIOS

In various stages of manufacture. Some AC/DC models AM/FM etc. Speakers, cabinets, etc. Personal shoppers only.

**From \$3 each**

### TRANSFORMERS A + R TYPE 5509

Ex. equipment, but as new. Prl. 240V. Sec. 2 x 12.6V at 2.5A.

**\$8 each**

### "ZEPHYR" 2K ROCKING ARMATURE MICROPHONES

Desk Type with PTT key switch in base. Brand new.

**\$25**

### "PHILIPS" TYPE CONCENTRIC TRIMMERS

Threaded stud mounting, 25 pF. 75c

### BRAND NEW 4-TRACK STEREO CARTRIDGE PLAYERS

2-5 Watts per channel at 8 ohms, 12V DC operation. In sealed boxes.

**\$15 each**

### MINIATURE SIEMENS RELAYS

4 sets changeover contacts, 6-12V DC operation. Type V23154. New.

**\$4 each**

### 5 TRANSISTOR RADIO CHASSIS \$1 each

### TANK WHIP ANTENNAS

16ft., complete with base

**\$12**

### C45 TRANSCEIVERS

23-38 MHz, FM, with inbuilt calibrator, approx. 15 Watts output. With 24V DC PSU.

**\$49**

### C11 TRANSMITTERS

2-16 MHz, AM or CW, 50 Watts output, inbuilt 100 kHz crystal calibrator. Complete with 24V DC PSU.

**\$65**

**MAIL ORDERS WELCOMED.** Please allow pack and post on items listed on this page. If further information required send a stamped S.A.E. for immediate reply from the above address.

# Completely Solid-State Choice of 40 or 80 METER MONOBANDERS

Designed and engineered for the ham on the move, single-band transceivers put the pleasure of mobile operation within the means of all amateur radio operators. Simple to install and operate, these compact units work directly off any standard 12V DC automobile battery. No transmitter warm-up time or intricate tuning is required. An easy to see Transmit LED Indicator, on the S-meter face, lets you know when your signal is getting out. And, you've never heard better clarity or experienced better performance from such as small, yet handsome, rig.

Experienced hams appreciate the Monobander selectivity, which minimizes all QRM disturbances.

\$ 289.00



## MONOBANDER SPECIFICATIONS

### GENERAL

Frequency Range  
MB-40A ..... 40 meters (7.0-7.3 MHz)  
MB-80A ..... 80 meters (3.5-4.0 MHz)  
Power Source  
Requirements ... 13.5V DC (nominal) at 5  
amps CW, average 1.5  
amps SSB transmit and 0.4  
amps receive.  
Modes of  
Operation ..... SSB or CW  
I.F. Filter ..... Crystal lattice, 2.0 kHz  
bandwidth, 1.7 shape  
factor, ultimate rejection in  
excess of 100 dB.  
Dimensions ..... 3"H x 8.5"W x 9"D.  
Weight ..... 6 lbs.

### RECEIVER

Sensitivity ..... Less than 0.5 microvolt at  
50 Ohms for 10 dB signal  
plus noise-to-noise ratio.  
Image Rejection ..... Better than -70 dB.  
CW Sidetone .... Optional MBCW accessory  
monitors CW keying.  
Audio Output ... 4-watts with less than 10%  
distortion to 3.2 Ohm in-  
ternal speaker.  
Audio  
Response ..... Essentially flat from 300 to  
3000 Hertz  $\pm$  3 dB.

 **SWAN**  
ELECTRONICS  
A subsidiary of Cubic Corporation

# INTERSELL PTY. LTD.